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RAW DATA AND FIRST ORDER CALCULATIONS FOR THE STUDY SILICA APP--ETC(1)

JAN 79 D C HURD, C FRALEY, J K FUGATE

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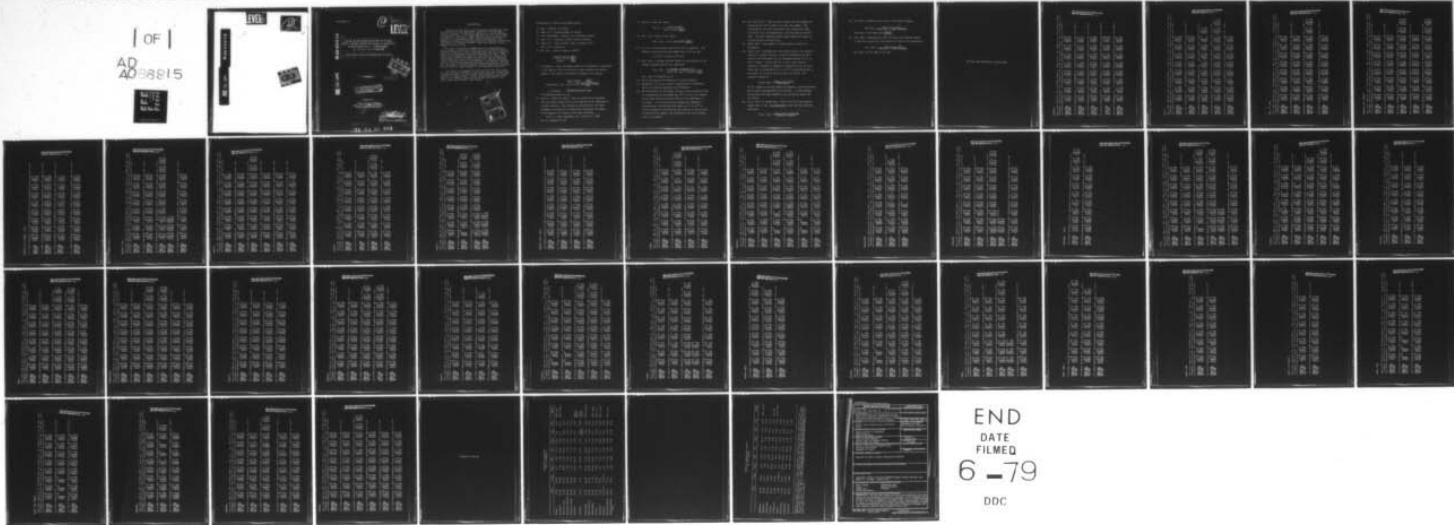
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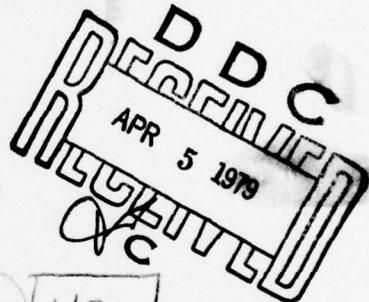
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(6) RAW DATA AND FIRST ORDER CALCULATIONS FOR THE STUDY
SILICA 'APPARENT' SOLUBILITIES AND RATES OF DISSOLUTION
AND PRECIPITATION FOR ca. 25 COMMON MINERALS
AT 1-2°C, pH 7.5-8.5 IN SEAWATER

(10) David C. /Hurd, Charles /Fraley, and James K. /Fugate



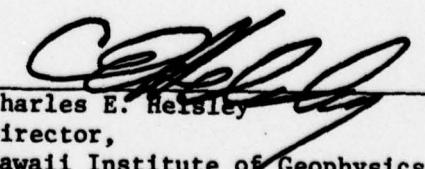
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(15)


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INTRODUCTION

This data report gives the raw data and preliminary flux calculations for the experiments referred to in the paper "Silica 'Apparent' Solubilities and Rates of Dissolution and Precipitation for ca. 25 Common Minerals at 1-2°C, pH 7.5-8.5 in Seawater", by David C. Hurd, Charles Fraley, and James K. Fugate, to be published in the volume "Proceedings from Symposium on Chemical Modeling--Speciation Sorption, Solubility, and Kinetics in Aqueous Systems", American Chemical Society Symposium Series, 1979.

In these experiments approximately 25 common minerals were allowed to react with 1-2°C, pH 7.5-8.5 seawater having different dissolved silica concentrations, and the increase or decrease in dissolved silica was monitored with time. What makes these experiments unique is that they were done at low temperature (1-2°C) and that the solutions were periodically centrifuged and a new solution having the original dissolved silica concentration was re-introduced. In addition, specific surface areas of the minerals were determined before and after the experiment to monitor whatever changes might have occurred and to allow for these changes in the ensuing calculations.

The report is divided into two sections; the first gives the raw data and preliminary calculations and the second gives elemental analyses of each mineral and references to analogous analyses by other workers. X-ray diffraction analyses were done on all samples, and listings of the positions of the major peaks are available upon request.



Explanation of symbols and abbreviations:

- 1) Den. = Density of mineral
- 2) FORM. WT. = Formula weight of mineral
- 3) # Si Atoms/FORM. = Number of Si atoms per formula
- 4) Spec. S.A. = Specific surface area in m^2/gram
- 5) Total S.A. = Total surface area of sample in m^2 =
Spec. S.A. \times sample wt
- 6) Mol. Vol. = Molar volume in cm^3/mol

$$= \frac{\text{FORMULA WEIGHT } \left(\frac{\text{gr}}{\text{Mol}} \right)}{\text{Density } \left(\frac{\text{gr}}{\text{cm}^3} \right)}$$

- 7) L Thickness = Layer thickness, where the thickness is calculated as the edge of a unit cell whose volume contains one formula weight of the mineral and which is assumed to be cubical.

$$\text{Volume unit cell} = 6.02 \times 10^{23} \left(\frac{\text{Molecular units}}{\text{Mole}} \right)$$
$$\text{Molar Volume } \left(\frac{\text{cm}^3}{\text{Mole}} \right)$$

$$\text{L Thickness} = \sqrt[3]{\text{Volume molecular unit}}$$

L Thickness measured in cm.

- 8) Vol./L = Volume per layer. This is calculated by assuming that the total surface area of the mineral can be regarded as a planar surface. This surface is multiplied by the layer thickness to arrive at a volume which represents the amount of the mineral to a depth of one layer thickness.

$$\text{Vol./L.} = \text{Layer thickness (cm)} \times \text{Total S.A. } (\text{cm}^2)$$

Vol./L. measured in cm^3 .

9) Mol./L = Moles per layer.

$$\text{Mol./L.} = \frac{\text{Vol./L. (cm}^3\text{)}}{\text{Molar Volume } \left(\frac{\text{cm}^3}{\text{Mole}}\right)}$$

10) Mol. Si/L = Moles Si per layer

$$\text{Mol. Si/L.} = (\# \text{ Si Atoms/FORM}) \left(\frac{\text{Mol}}{\text{Layer}} \right)$$

11) S.A./cc = Total surface area m^2 per cm^3 of solution. The amount of solution for each sample was 75 cm^3 so that

$$\text{S.A./cm}^3 = \text{Total S.A./75 cm}^3$$

12) Part. Rad. = Average particle radius of the particle in the sample assuming that all are spherical.

$$\text{Part. Rad.} = \frac{3 \times \text{Weight of Sample (gr)}}{\text{Total S.A. } (\text{cm}^2) \times \text{Density } \left(\frac{\text{gr}}{\text{cm}^3}\right)}$$

Part. Rad. is measured in cm.

13) pH is the range of pH values for a given solution.

14) MicroM Dis. Si is the initial concentration of dissolved silica in solution measured in 10^{-6} Moles/l.

15) Mol./Area (0-6) is the number of moles either dissolved from or precipitated by the sample per cm^2 of area of the sample in the time interval from the start of the experiment to six weeks. It is calculated by summing the changes in concentration, multiplying this figure by 7.5×10^{-8} to convert changes in concentration in solution to silica lost or gained by the sample, and dividing by the total surface area of the sample.

- 16) Mol./Area (2-6). Same as above except only the changes in concentration from 14 days to 42 days are summed. The following are the left-hand labels that appear with each new value of pH, μM dissolved Si, and new specific surface area. The data appearing beside these labels are based on the new specific surface area.
- 17) DELTA CONC. = the change in concentration of silica in micromoles.
- 18) Layers Lost - Assuming that the surface area of the mineral sample is a planar surface, a layer is defined to be this surface area multiplied by the thickness defined in (7) to give a volume. Layers lost up to each time value is computed by adding the changes in concentration up to that time; this is multiplied by 7.5×10^{-8} to concentrations in micromolar in 75 ml of fluid to moles of silica. The complete formula is

$$\text{Layers Lost} = \frac{(\sum \Delta C \times 7.5 \times 10^{-8})}{\text{Moles/layer}}$$

If the changes in concentration are negative, this calculation gives layers precipitated by the mineral. If some changes are positive and some negative, the calculation gives the net effect.

- 19) % Vol. Lost = % volume lost. This is the % of the mineral sample that is lost (by dissolution) over the time interval indicated.

$$\% \text{ Vol. Lost} = \frac{\text{Layers lost} \times \text{Vol/layer}}{\text{Volume of Sample}}$$

20) AVG FLUX = Average flux of silica from mineral sample.

$$\text{AVG FLUX} = \frac{\Sigma \Delta C \times 7.5 \times 10^{-8}}{\text{Total S.A.} \times \text{TIME INTERVALS}}$$

The units of AVG FLUX are ($\frac{\text{Moles}}{\text{cm}^2 \cdot \text{sec}}$).

21) Ins. FLUX = Instantaneous flux of silica from mineral sample
or the flux during only one interval of time in the experiment.

$$\text{Ins. FLUX} = \frac{\Delta C \times 7.5 \times 10^{-8}}{\text{Total S.A.} \times \text{TIME INTERVAL}}$$

The units are the same as in (20).

RAW DATA AND PRELIMINARY CALCULATIONS

ANORTHITE

Den. = 2.76 Fom. Wt. = 278 # Si Atoms / Form. = 2 Spec. S. A. = .88 Total S. A. = 1.76 Mol. Vol. = 100.7

L Thickness = 5.51 -8 Vol./L = 9.71 -4 Mol./L = 9.64 -6 Mol. S1/L = 1.92 -5 S.A./cc = 2.34 2 Part. Rad. = 1.23 -4

pH = 8.1-8.3 MicroM Dis. Si = 5.6 Mol./Area(0-6) = 3.91-10 Mol./Area(2-6) = 2.51-10 Spec. S.A. = 7.00 -1

	1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	6.00	9.00	1.10	1.00	1.00	9.00	8.00	1.00	1.00
LAYERS LOST	2.93 -2	7.33 -2	1.27 -1	1.75 -1	2.19 -1	2.59 -1	3.07 -1	3.56 -1	
Z VOL. LOST	3.12 -5	7.81 -5	1.35 -4	1.87 -4	2.34 -4	2.76 -4	3.28 -4	3.80 -4	
Avg. FLUX	8.92-15	9.30-16	2.30-16	1.59-16	1.32-16	1.17-16	1.11-16	1.07-16	
INS. FLUX	8.92-15	5.82-16	1.13-16	8.85-17	7.97-17	7.08-17	8.85-17	8.85-17	

pH = 7.6-7.8 MicroM Dis. Si = 3.0 Mol./Area(0-6) = 3.49-10 Mol./Area(2-6) = 2.37-10 Spec. S.A. = 6.00 -1

	1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.00	6.00	8.00	7.00	8.00	8.00	7.00	8.00	8.00
LAYERS LOST	2.28 -2	5.02 -2	1.02 -1	1.42 -1	1.88 -1	2.28 -1	2.73 -1	3.19 -1	
Z VOL. LOST	2.08 -5	5.21 -5	9.38 -5	1.30 -4	1.72 -4	2.08 -4	2.50 -4	2.91 -4	
Avg. FLUX	6.94-15	7.23-16	1.86-16	1.29-16	1.13-16	1.03-16	9.92-17	9.64-17	
INS. FLUX	6.94-15	4.52-16	9.64-17	7.23-17	8.26-17	7.23-17	8.26-17	8.26-17	

pH = 7.8-8.0 MicroM Dis. Si = 114.0 Mol./Area(0-6) = -5.83-10 Mol./Area(2-6) = -2.49-10 Spec. S.A. = 8.10 -1

	1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-1.50 1*	-2.70 1	-3.00 1	-2.50 1	-1.20 1	-7.00 1	-7.00 1	-6.00 1	
LAYERS LOST	-6.33 -2	-1.77 -1	-3.04 -1	-4.09 -1	-4.60 -1	-4.90 -1	-5.06 -1	-5.32 -1	
Z VOL. LOST	-7.81 -5	-2.18 -4	-3.75 -4	-5.05 -4	-5.68 -4	-6.04 -4	-6.25 -4	-6.56 -4	
Avg. FLUX	-1.92-14	-2.25-15	-5.51-15	-3.71-16	-2.78-16	-2.21-16	-1.83-16	-1.60-16	
INS. FLUX	-1.92-14	-1.50-15	-2.67-16	-1.91-16	-9.18-17	-5.35-17	-3.06-17	-4.59-17	

pH = 8.1-8.3 MicroM Dis. Si = 5.6 Mol./Area(0-6) = 4.50-10 Mol./Area(2-6) = 2.93-10 Spec. S.A. = 6.00 -1

	1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	5.00	9.00	1.10	1.00	1.00	9.00	8.00	1.00	1.00
LAYERS LOST	2.85 -2	7.98 -2	1.42 -2	1.99 -1	2.50 -1	2.96 -1	3.23 -1	3.60 -1	
Z VOL. LOST	2.60 -5	7.29 -5	1.30 -4	1.82 -4	2.29 -4	2.71 -4	3.23 -4	3.75 -4	
Avg. FLUX	8.68-15	1.01-15	2.58-16	1.80-16	1.51-16	1.36-16	1.28-16	1.24-16	
INS. FLUX	8.68-15	6.79-16	1.32-16	1.03-16	9.30-17	8.26-17	1.03-16	1.03-16	

pH = 7.6-7.8 MicroM Dis. Si = 3.0 Mol./Area(0-6) = 2.49-10 Mol./Area(2-6) = 1.69-10 Spec. S.A. = 8.40 -1

	1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.00	6.00	4.07	8.00	7.00	8.00	7.00	8.00	8.00
LAYERS LOST	1.62 -2	4.07 -2	3.33 -2	1.01 -1	1.34 -1	1.62 -1	1.95 -1	2.28 -1	
Z VOL. LOST	2.08 -5	5.16 -5	3.38 -5	1.30 -4	1.72 -4	2.08 -4	2.50 -4	2.91 -4	
Avg. FLUX	4.96-15	5.16-16	1.32-16	9.22-17	8.11-17	7.38-17	7.08-17	6.88-17	
INS. FLUX	4.96-15	3.23-16	6.88-17	5.16-17	5.90-17	5.16-17	5.90-17	5.90-17	

ALBITE

Den. = 2.62 Form. Wt. = 262 # Si Atoms / Form. = 3 Spec. S. A. = .62 Total S. A. = 1.24 Mol. Vol. = 120.0
 L Thickness = 5.50 -8 Vol./L = 6.82 -4 Mol./L = 6.82 -6 Mol. S1/L = 2.04 -5 S.A./cc = 1.65 2 Part. Rad. = 1.84 -4
 PH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 4.79-10 Mol./Area(2-6) = 3.13-10 Spec. S.A. = 4.30 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	6.00	1.10	8.00	7.00	6.00	7.00	8.00
LAYERS LOST	1.05	2.42	1.00	1.42	1.79	1.11	2.48	1.90
Z VOL. LOST	6.55	-6	2.62	-5	6.22	-5	1.63	-4
Avg. FLUX	4.84-15		8.07-16	2.73-16	8.84-15	1.11-16	1.54-16	1.80-4
INS. FLUX	4.84-15		6.31-16	1.85-16	1.94-16	1.44-16	1.35-16	1.32-16
				1.15-16	1.00-16	8.65-17	1.00-16	1.15-16

PH = 7.6- .6 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 1.70-10 Mol./Area(2-6) = 9.92-11 Spec. S.A. = 6.80 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	4.00	1.00	3.00	4.00	3.00	4.00	4.00
LAYERS LOST	6.67	-3	2.00	-2	4.33	-2	5.34	-2
Z VOL. LOST	6.55	-6	1.96	-5	4.25	-5	5.24	-5
Avg. FLUX	2.06-15		2.82-16	1.18-16	2.29-17	1.29-17	2.31-17	1.32-17
INS. FLUX	3.06-15		2.66-16	7.46-17	2.73-17	3.64-17	2.73-17	3.64-17

PH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = 0.00 Mol./Area(2-6) = 3.98-11 Spec. S.A. = 4.70 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	-6.00	1.00	-1.00	2.00	2.00	1.00	2.00
LAYERS LOST	-9.66	-3	-2.89	-2	-2.41	-2	-1.93	-3
Z VOL. LOST	-6.55	-6	-1.96	-5	-1.63	-5	-1.96	-6
Avg. FLUX	-6.43-15		-5.54-16	-6.59-17	-3.95-17	-1.75-17	-6.59-18	0.00
INS. FLUX	-4.43-15		-3.85-16	1.53-17	-1.31-17	2.63-17	2.63-17	1.31-17

PH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -1.87-10 Mol./Area(2-6) = -1.58-10 Spec. S.A. = 5.20 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.00	-1.30	1	5.00	-5.00	-7.00	-6.00	-2.00
LAYERS LOST	1.74	-2	-3.92	-2	-1.74	-2	-3.92	-2
Z VOL. LOST	1.30	-5	-2.94	-5	-1.30	-5	-2.94	-5
Avg. FLUX	8.01-15		-7.51-16	-4.76-17	-5.36-17	-6.35-17	-6.35-17	-5.72-17
INS. FLUX	8.01-15		-1.13-15	6.95-17	-5.96-17	-8.34-17	-7.15-17	-2.38-17

PH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = -2.29-11 Mol./Area(2-6) = 6.12-11 Spec. S.A. = 4.90 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	-3.00	0.00	0.00	2.00	2.00	2.00	2.00
LAYERS LOST	-9.26	-3	-2.31	-2	-2.31	-2	-1.38	-2
Z VOL. LOST	-6.55	-6	-1.63	-5	-1.63	-5	-9.82	-6
Avg. FLUX	-4.25-15		-4.42-16	-6.32-17	-3.16-17	-1.26-17	-3.16-18	2.53-17
INS. FLUX	-4.25-15		-2.77-16	0.00	0.00	2.53-17	2.53-17	-2.38-17

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APUA PT. LAVA

Den. = 3.90 Form. Wt. = 116 # Si Atoms / Form. = 1 Spec. S. A. = .31 Total S. A. = .62 Mol. Vol. = 29.7
 L. Thickness = 3.67 -8 Vol./L = 2.27 -4 Mol./L = 7.66 -6 Mol. Si/L = 7.66 -6 S.A./cc = 8.26 1 Part. Rad. = 2.48 -4

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 2.58 -9 Mol./Area(2-6) = 2.23 -9 Spec. S.A. = 3.20 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	5.00	7.00	1.80	1.70	1.60	1.60	1.18	2.40
LAYERS LOST	4.74	-2	1.13	-1	4.45	-1	7.49	1
Z VOL. LOST	2.17	-5	1.21	-5	2.04	-4	2.74	-4
AVG. FLUX	1.62	-14	1.62	-15	5.81	-16	4.55	-16
INS. FLUX	1.62	-14	9.90	-16	4.06	-16	7.63	-16
			3.29	-16	3.10	-16	2.28	-15
							4.65	-16

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 6.79-10 Mol./Area(2-6) = 4.24-10 Spec. S.A. = 5.30 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	6.00	8.00	2.20	1	1.60	1	1.20	1
LAYERS LOST	3.43	-2	8.01	-2	2.06	-1	4.46	-1
Z VOL. LOST	2.60	-5	6.09	-5	1.56	-4	3.39	-4
AVG. FLUX	1.17	-14	1.14	-15	4.21	-16	2.57	-16
INS. FLUX	1.17	-14	6.83	-16	3.04	-16	2.05	-16
			3.00	-16	1.87	-16	1.40	-16
					1.63	-16	1.16	-16
							9.35	-17

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 2.55-10 Mol./Area(2-6) = 1.53-10 Spec. S.A. = 2.20 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-4.00	-1.10	1	-9.00	2.00	-3.00	3.00	4.00
LAYERS LOST	-5.51	-2	-2.06	-1	-3.31	-5	-3.03	-1
Z VOL. LOST	-1.73	-5	-6.52	-5	-1.04	-4	-9.56	-5
AVG. FLUX	-1.89	-14	-2.95	-15	-6.76	-16	-2.44	-16
INS. FLUX	-1.89	-14	-2.26	-15	-2.95	-16	-5.63	-17
					8.45	-17	8.45	-17
							1.12	-16

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 3.06-10 Mol./Area(2-6) = 1.98-10 Spec. S.A. = 4.90 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	4.00	8.00	1.00	4.00	4.00	4.00	4.00
LAYERS LOST	1.23	-2	3.71	-2	8.66	-2	1.73	-1
Z VOL. LOST	8.69	-6	2.60	-5	6.08	-5	1.21	-4
AVG. FLUX	4.25	-15	5.31	-16	1.77	-16	1.51	-16
INS. FLUX	4.25	-15	3.69	-16	1.18	-16	1.01	-16
					5.06	-17	5.06	-17
							0.00	8.45-17

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BENTONITE (N.E. WYOMING)

Den. = 2.00 Form. Wt. = 360 # Si Atoms / Form. = 4 Spec. S. A. = 68.00 Total S. A. = 136.00 Mol. Vol. = 180.0

L Thickness = 6.69 - 8 Vol./L = 9.10 - 2 Mol./L = 5.06 - 4 Mol. S1/L = 2.02 - 3 S.A./cc = 1.81 4 Part. Rad. = 2.20 - 6

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 2.13-10 Mol./Area(2-6) = 1.32-10 Spec. S.A. = 1.04 1

DELTA CONC.	4.90	1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	1.18	-2	3.02	1	5.45	-2	7.48	-2	9.35	-2
Z VOL. LOST	1.65	-4	4.21	-4	7.59	-4	1.04	-3	1.30	-3
Avg. FLUX	4.90-15		5.21-16	1.34-16	9.21-17	7.67-17	6.50-17	6.66-17	6.16-17	5.88-17
INS. FLUX	4.90-15		3.30-16	6.95-17	5.00-17	4.59-17	3.63-17	4.17-17	4.47-17	

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 2.71-10 Mol./Area(2-6) = 1.49-10 Spec. S.A. = 8.90

DELTA CONC.	6.00	1*	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	1.69	-2	4.67	-2	1.25	2	1.05	2	8.00	1
Z VOL. LOST	2.02	-4	5.56	-4	8.20	-2	1.11	-1	1.34	-1
Avg. FLUX	7.02-15		8.04-16	2.02-16	1.33-16	1.37-16	1.60-16	1.81-16	1.52-16	1.68-16
INS. FLUX	7.02-15		5.34-16	1.01-16	7.31-17	5.57-17	4.45-17	3.90-17	3.48-17	

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 7.50-11 Mol./Area(2-6) = 3.40-11 Spec. S.A. = 7.70

DELTA CONC.	2.70	1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	0.83	-3	1.76	-2	2.74	-2	3.53	-2	3.76	-2
Z VOL. LOST	9.11	-5	1.82	-4	2.83	-4	3.64	-4	3.88	-4
Avg. FLUX	3.65-15		3.04-16	6.76-17	4.34-17	3.34-17	3.08-17	3.55-17	4.72-17	5.19-17
INS. FLUX	3.65-15		1.58-16	2.81-17	1.93-17	5.63-18	9.66-18	1.04-17	2.25-17	5.69-17

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 2.03-10 Mol./Area(2-6) = 1.13-10 Spec. S.A. = 8.70

DELTA CONC.	4.00	1*	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	1.15	-2	3.26	1	5.99	-2	7.90	-2	9.93	-2
Z VOL. LOST	1.34	-4	3.78	-4	6.98	-4	9.21	-4	1.15	-3
Avg. FLUX	4.78-15		5.58-16	1.47-16	9.72-17	8.14-17	1.31-17	6.96-17	1.45-17	1.58-17
INS. FLUX	4.78-15		3.74-16	7.89-17	4.70-17	4.98-17	5.63-18	3.42-17	2.85-17	1.12-17

pH = 8.3-8.5 MicroM Dis. Si = 205.0 Mol./Area(0-6) = 1.76-10 Mol./Area(2-6) = 1.30-10 Spec. S.A. = 9.00

DELTA CONC.	-8.00	1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	-2.23	-3	-4.37	-2	-6.00	1	-7.00	1	-6.60	1
Z VOL. LOST	-2.69	-5	-1.65	-4	-3.67	-4	-5.01	-2	-5.59	-2
Avg. FLUX	-9.25-16		-2.36-16	-7.50-17	-6.16-17	-6.04-17	-8.01	-7.47	-1.02	-1.18
INS. FLUX	-9.25-16		-2.06-16	-4.82-17	-4.82-17	-4.27-17	-5.53-17	-5.28-17	-1.03	-1.23

BENTONITE (N.E. WYOMING) (CONT.)

pH = 7.9-8.0 MicroM Dis. Si = 364.0 Mol./Area(0-6) = -4.74-11 Mol./Area(2-6) = -6.66-12 Spec. S.A. = 9.00

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	-3.00 1*	-5.40 1	-1.40 1	-1.30 1	-3.00 1	-1.00 1	8.00 1	2.00
Z VOL. LOST	-8.39 -3	-2.35 -2	-2.74 -2	-3.10 -2	-3.19 -2	-3.47 -2	-3.24 -2	-3.19 -2
Avg. FLUX	-1.01 -4	-2.83 -4	-3.30 -4	-3.74 -4	-3.84 -4	-4.18 -4	-3.91 -4	-3.84 -4
INS. FLUX	-3.47 -15	-4.05 -16	-6.75 -17	-3.82 -17	-2.61 -17	-2.13 -17	-1.59 -17	-1.30 -17
	-3.47 -15	-2.71 -16	-1.12 -17	-8.95 -18	-2.06 -18	-6.88 -18	5.51 -18	1.37 -18

pH = 7.8-8.0 MicroM Dis. Si = 781.0 Mol./Area(0-6) = -6.83-11 Mol./Area(2-6) = -5.79-11 Spec. S.A. = 9.00

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-1.00 2*	1.74 2	-9.90 1	-6.30 1	-4.30 1	-6.00 1	-2.40 1	-3.00
LAYERS LOST	-2.79 -2	-2.07 -2	-6.99 -3	-2.46 -2	-3.66 -2	-3.83 -2	-4.62 -2	-4.59 -2
Z VOL. LOST	-3.37 -4	2.49 -4	-8.43 -5	-2.96 -4	-4.42 -4	-4.62 -4	-5.43 -4	-5.53 -4
Avg. FLUX	-1.15 -14	3.56 -16	-1.72 -17	-3.03 -17	-3.00 -17	-2.35 -17	-2.21 -17	-1.88 -17
INS. FLUX	-1.15 -14	8.73 -16	-7.95 -17	-4.34 -17	-2.96 -17	-4.13 -18	-1.65 -17	-2.06 -18

pH = 7.9-8.0 MicroM Dis. Si = 364.0 Mol./Area(0-6) = -1.95-11 Mol./Area(2-6) = -3.59-12 Spec. S.A. = 1.67 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-3.00 1*	-5.40 1	-1.40 1	-1.30 1	-3.00 1	-1.00 1	8.00 1	2.00
LAYERS LOST	-4.52 -4	-8.52 -3	-1.07 -2	-1.26 -2	-1.31 -2	-1.46 -2	-1.36 -2	-1.31 -2
Z VOL. LOST	-1.01 -5	-1.92 -4	-2.39 -4	-2.83 -4	-2.93 -4	-3.27 -4	-3.00 -4	-2.93 -4
Avg. FLUX	-1.87 -16	-1.48 -16	-2.63 -17	-1.55 -17	-1.07 -17	-9.00 -18	-6.60 -18	-5.38 -18
INS. FLUX	-1.87 -16	-1.46 -16	-6.06 -18	-4.82 -18	-1.11 -18	-3.71 -18	-2.97 -18	-7.42 -19

pH = 7.8-8.0 MicroM Dis. Si = 781.0 Mol./Area(0-6) = -1.88-10 Mol./Area(2-6) = -5.81-11 Spec. S.A. = 1.07 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-1.00 2*	-1.74 2	-9.90 1	-6.30 1	-6.30 1	-6.00 1	-2.40 1	-3.00 1
LAYERS LOST	-2.35 -2	-6.45 -2	-8.78 -2	-1.02 -1	-1.12 -1	-1.14 -1	-1.19 -1	-1.26 -1
Z VOL. LOST	-3.37 -4	-9.24 -4	-1.25 -3	-1.47 -3	-1.61 -3	-1.63 -3	-1.71 -3	-1.81 -3
Avg. FLUX	-9.73 -15	-1.11 -15	-2.16 -16	-1.26 -16	-9.25 -17	-7.02 -17	-5.89 -17	-5.20 -17
INS. FLUX	-9.73 -15	-7.36 -16	-6.69 -17	-3.65 -17	-2.49 -17	-3.47 -18	-1.39 -17	-1.73 -17

BENTONITE (CRC)

Den. = 2.00 Fom. Wt. = 360 # Si Atoms / Fom. = 4 Spec. S. A. = 68.00 Total S. A. = 136.00 Mol. Vol. = 180.0

L Thickness = 6.69 -8 Vol./L = 9.10 -2 Mol./L = 5.06 -4 Mol. Si/L = 2.02 -3 S.A./cc = 1.81 4 Part. Rad. = 2.20 -6

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 7.83-11 Mol./Area(2-6) = 4.11-11 Spec. S.A. = 3.27 1

	1 HR	1 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	9.00 1	1.49 2	1.14 2	9.10 1	7.60 1	6.70 1	6.00 1
LAYERS LOST	6.93 -3	1.61 -2	2.49 -2	3.19 -2	3.78 -2	4.29 -2	4.76 -2
Z VOL. LOST	3.03 -4	7.08 -4	1.09 -3	1.40 -3	1.65 -3	1.88 -3	2.08 -3
Avg. FLUX	2.86-15	2.78-16	6.14-17	3.93-17	2.10-17	2.64-17	2.34-17
INS. FLUX	2.86-15	1.66-16	2.52-17	1.72-17	1.44-17	1.27-17	1.13-17

	1 HR	1 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	1.00 2*	1.78 2	1.44 2	1.15 2	9.40 1	7.80 1	6.00 1
LAYERS LOST	5.83 -3	1.62 -2	2.46 -2	3.13 -2	3.67 -2	4.13 -2	4.68 -2
Z VOL. LOST	3.37 -4	9.38 -4	1.42 -3	1.81 -3	2.12 -3	2.39 -3	2.59 -3
Avg. FLUX	2.41-15	2.79-16	6.05-17	3.85-17	3.01-17	2.54-17	2.20-17
INS. FLUX	2.41-15	1.86-16	2.41-17	1.65-17	1.34-17	1.11-17	8.61-18

	1 HR	1 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	5.40 1	4.20 1	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS
LAYERS LOST	3.88 -3	6.91 -3	8.06 -3	5.70 -3	1.90 -1	2.10 -1	2.50 -1
Z VOL. LOST	1.82 -4	3.24 -4	3.78 -4	3.61 -4	6.33 -3	4.82 -3	3.02 -3
Avg. FLUX	1.60-15	1.19-16	1.98-17	9.47-18	2.97 -4	2.26 -4	1.41 -4
INS. FLUX	1.60-15	5.43-17	3.30-18	8.85-19	5.19-18	2.96-18	1.48-18

	84 DYS	98 DYS	112 DYS	116 DYS	130 DYS	144 DYS	158 DYS
DELTA CONC.	-2.10 1	-1.50 1	-8.00	-5.47 -3	-2.07 -3	-2.10 -1	-2.50 -1
LAYERS LOST	-3.81 -3	-4.89 -3	-5.47 -3	-2.29 -4	-2.56 -4	-4.82 -3	-5.75 -4
Z VOL. LOST	-1.78 -4	-2.82 -4	-8.60-19	-8.41-19	-1.28 -3	-1.07 -3	-2.30 -3
Avg. FLUX	-7.82-19	-8.82-19	-1.32-18	-7.08-19	-1.36-18	-3.72-18	-4.42-18
INS. FLUX	-1.86-18					-6.78-18	-2.03-18

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	7.00 1	1.21 2	1.05 2	8.50 1	5.50 1	3.80 1	3.00 1	2.10 1
LAYERS LOST	3.27 -3	8.94 -3	1.38 -2	1.78 -2	2.04 -2	2.21 -2	2.36 -2	2.45 -2
Z VOL. LOST	2.36 -4	6.44 -4	9.99 -4	1.28 -3	1.47 -3	1.59 -3	1.70 -3	1.77 -3
Avg. FLUX	1.35-15	1.54-16	3.41-17	2.19-17	1.67-17	1.26-17	1.16-17	1.00-17
INS. FLUX	1.35-15	1.01-16	1.41-17	9.79-18	6.33-18	3.45-18	2.42-18	

DIOPSSIDE

Den. = 3.25 Fom. Wt. = 216 # Si Atoms / Form. = 2 Spec. S. A. = .75 Total S. A. = 1.50 Mol. Vol. = 66.4
L Thckness = 4.80 -8 Vol./L = 7.20 -4 Mol./L = 1.08 -5 Mol. Si/L = 2.16 -5 S.A./cc = 2.00 2 Part. Rad. = 1.23 -4

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 1.46 -9 Mol./Area(2-6) = 1.17 -9 Spec. S.A. = 8.70 -1

DELTA CONC.	6.00	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	6.78 -2	2.00 1	4.30 1	4.60 1	5.60 1	5.20 1	5.70 1	6.10 1	
Z VOL. LOST	2.42 -5	1.05 -2	2.05 -1	3.42 -1	5.09 -1	6.64 -1	8.34 -1	1.01	
AVG. FLUX	7.18 -15	1.29 -15	2.79 -4	4.65 -4	6.92 -4	9.03 -6	1.13 -3	1.38	-3
INS. FLUX	7.18 -15	1.06 -15	4.91 -16	4.09 -16	4.06 -16	3.97 -16	3.99 -16	4.05 -16	
		3.57 -16	3.27 -16	3.99 -16	3.70 -16	4.06 -16	4.34 -16		

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 1.17 -9 Mol./Area(2-6) = 8.21-10 Spec. S.A. = 1.20

DELTA CONC.	1.50 1*	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	3.24 -2	8.64 -2	2.44 -1	8.20 1	7.60 1	6.70 1	2.90 1	2.90 1	
Z VOL. LOST	6.07 -5	1.62 -4	4.57 -4	4.21 -1	5.85 -1	6.87 -1	7.49 -1	8.12 -1	
AVG. FLUX	1.30 -14	1.46 -15	5.82 -16	7.89 -6	1.09 -3	1.28 -3	1.40 -3	1.52 -3	
INS. FLUX	1.30 -14	9.43 -16	4.40 -16	5.02 -16	4.66 -16	4.10 -16	3.58 -16	3.23 -16	
			4.23 -16	3.92 -16	2.42 -16	1.49 -16	1.49 -16	1.49 -16	

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 6.33-10 Mol./Area(2-6) = 4.88-10 Spec. S.A. = 1.16

DELTA CONC.	4.00	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	8.94 -3	4.26 -2	1.00 -1	2.60 1	2.60 1	2.60 1	3.00 1	3.40 1	2.20 1
Z VOL. LOST	1.62 -5	7.69 -5	1.82 -4	1.63 -1	2.21 -1	2.79 -1	3.46 -1	4.38 -1	5.14 -1
AVG. FLUX	3.59 -15	7.10 -6	2.40 -16	2.95 -4	4.00 -4	5.06 -4	6.27 -4	7.93 -4	9.31 -4
INS. FLUX	3.59 -15	5.85 -16	1.62 -16	1.95 -16	1.76 -16	1.67 -16	1.65 -16	1.74 -16	1.53 -16
			1.62 -16	1.49 -16	1.38 -16	1.38 -16	1.60 -16	2.19 -16	2.19 -16

pH = 7.6-7.9 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 9.11-10 Mol./Area(2-6) = 6.49-10 Spec. S.A. = 1.23

DELTA CONC.	1.00 1*	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	2.10 -2	6.32 -2	1.00 -2	1.81 -1	3.43 -1	6.20 1	3.70 1	2.00 1	1.70
Z VOL. LOST	4.04 -5	1.21 -4	3.48 -4	3.48 -4	6.60 -4	9.11 -4	5.52 -1	5.94 -1	6.30 -1
AVG. FLUX	8.46 -15	1.05 -15	4.33 -16	4.33 -16	4.10 -16	3.78 -16	1.06 -3	1.14 -3	1.21 -3
INS. FLUX	8.46 -15	7.36 -16	3.29 -16	3.88 -16	3.12 -16	3.12 -16	2.84 -16	2.51 -16	
			3.53 -16	2.90 -17	1.86 -16	1.86 -16	1.00 -16	8.56 -17	

pH = 7.9-8.0 MicroM Dis. Si = 364.0 Mol./Area(0-6) = 6.73-11 Mol./Area(2-6) = 1.69-10 Spec. S.A. = 1.28

DELTA CONC.	-6.00	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	-1.21 -2	-3.24 -2	-7.09 2	-7.09 2	-8.30 -2	-7.49 -2	-3.24 -1	2.10 1	1.62 -1
Z VOL. LOST	-2.42 -5	-6.42 -5	-1.61 -4	-1.61 -4	-1.66 -4	-1.49 -4	-6.47 -5	3.23 -5	9.31 -5
AVG. FLUX	-4.88 -15	-5.42 -16	-1.69 -16	-1.69 -16	-9.93 -17	-5.97 -17	-1.93 -17	7.75 -18	1.85 -17
INS. FLUX	-4.88 -15	-3.53 -16	-1.07 -16	-2.90 -17	1.93 -17	1.01 -16	1.16 -16	7.26 -17	

pH = 7.8-8.0 MicroM Dis. Si = 785.0 Mol./Area(0-6) = -1.99-10 Mol./Area(2-6) = -1.75-11 Spec. S.A. = 1.28

DELTA CONC.	-1.50 1*	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	-3.03 -2	-1.00 1	-1.50 1	-3.20 1	-1.20 1	-1.00 1	-1.70 1	-1.49 -1	6.00 c
Z VOL. LOST	-6.07 -5	-1.21 -4	-2.51 -4	-2.51 -4	-2.99 -4	-3.40 -4	-3.23 -4	-2.99 -4	-1.37 -1
AVG. FLUX	-1.22 -14	-1.01 -15	-3.00 -16	-1.79 -16	-1.35 -16	-9.68 -17	-7.16 -17	-5.75 -4	
INS. FLUX	-1.22 -14	-5.30 -16	-1.80 -16	-5.81 -17	-4.86 -17	1.93 -17	2.90 -17	2.90 -17	

CHLORITE

Den. = 3.00 Form. Wt. = 619 # Si Atoms / Form. = 3 Spec. S. A. = 4.00 Total S. A. = 8.00 Mol. Vol. = 206.3
L Thickness = 7.00 - 8 Vol./L = 5.60 - 3 Mol./L = 2.71 - 5 Mol. Si/L = 8.15 - 5 S.A./cc = 1.06 3 Part. Rad. = 2.50 - 5

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 8.46-11 Mol./Area(2-6) = 5.95-11 Spec. S.A. = 4.03

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.00	9.00	1.40	1.20	1.30	1.20	1.30	1.40
LAYERS LOST	3.65	-3	1.18	2.46	3.56	4.74	5.84	7.03
Z VOL. LOST	3.09	-5	1.00	2.08	3.01	4.02	5.05	6.30
Avg. FLUX	1.03	-15	1.40	1.15	1.15	1.66	1.46	1.04
INS. FLUX	1.03	-15	1.01	1.16	2.51	1.84	1.17	2.33

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 1.17-10 Mol./Area(2-6) = 6.92-11 Spec. S.A. = 3.25

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	1.00	1*	1.40	1.80	1.30	1.40	1.20	1.00
Z VOL. LOST	1.13	-2	2.71	2	6.22	7.81	9.17	1.04
Avg. FLUX	7.73	-5	1.85	3.26	4.25	5.33	6.26	7.11
INS. FLUX	3.20	-15	3.20	1.15	8.01	5.24	3.88	2.44

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 6.93-10 Mol./Area(2-6) = 3.60-10 Spec. S.A. = 7.90 - 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	1	-2.50	1	-2.40	1	-1.90	1
LAYERS LOST	-9.31	-2	-2.09	-3.26	-4.37	-5.26	-6.91	-8.00
Z VOL. LOST	-1.54	-4	-3.48	-4	-5.41	-7.27	-8.76	-10.38
Avg. FLUX	-2.63	-14	-2.47	-15	-5.49	-16	-3.68	-4.79
INS. FLUX	-2.63	-14	-1.43	-15	-2.28	-16	-1.88	-2.12

pH = 7.6-7.9 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 3.36-11 Mol./Area(2-6) = 2.08-11 Spec. S.A. = 3.23

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-3.00	-4.00	-4.00	-4.00	-5.00	-6.00	-3.00	-2.00
LAYERS LOST	-3.61	-3	-7.97	-3	-1.25	-2	-2.27	-2
Z VOL. LOST	-2.32	-5	-5.41	-5	-8.51	-5	-1.54	-4
Avg. FLUX	-9.67	-6	-9.40	-17	-2.11	-17	-1.27	-1
INS. FLUX	-9.67	-16	-5.60	-17	-8.95	-18	-7.67	-18

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MINTONITE

Dens. = 3.20 Form. Wt. = 464 # Si Atoms / Form. = 3 Spec. S. A. = 5.50 Total S. A. = 11.00 Mol. Vol. = 145.0

L Thickness = 6.23 - 8 Vol./L = 6.85 - 3 Mol./L = 4.72 - 5 Mol. S1/L = 1.41 - 4 S.A./cc = 1.46 3 Part. Rad. = 1.70 - 5

$\text{pH} = 8.3-8.5$ MICRON Dia. Si = 1.8 Mol./Area(0-6) = 2.12-10 Mol./Area(2-6) = 1.42-10 Spec. S.A. = 5.90

	1	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	2.00	1*	3.80	1	5.20	1	6.40	1	5.10	1	4.00	1
LAYERS LOST	9.85	-3	2.85	-2	5.42	-1	7.59	-2	5.01	-1	1.41	-1
Z VOL. LOST	1.16	-4	3.36	-4	6.38	-4	8.93	-4	1.18	-3	1.42	-3
Avg. FLUX	2.53	15	4.26	16	4.15	16	8.09	17	7.18	17	6.43	17
MINS. FLUX	2.53	15	2.91	16	6.31	17	8.62	17	5.35	17	6.02	17

$$DP = 0.385 \text{ Micron Bits}, S1 = 55.0 \text{ Mol./Area(0-6) = 1.121} \text{ Mol./Area(2-6) = 2.8711} \text{ S.A. = 6.40}$$

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	56 DYS	70 DYS
DELTA CONC.	0.00	-2.00	1.00	8.00	1.00	1.20	1.00	1.00	1.00	1.20
LAYERS LOST	0.00	-9.08	-4	3.63	-3	1.18	-2	1.72	-2	2.59
Z VOL. LOST	0.00	-1.16	-5	4.64	-5	1.50	-4	2.20	-4	3.30
Avg. FLUX	0.00	-1.35	-17	7.75	-18	7.75	-18	7.72	-18	8.88
Invs. FLUX	0.00	-1.41	-17	1.13	-17	7.75	-18	9.10	-18	9.20

$\text{pH} = 8.3-8.5$ Microm Dis. S1 = 105.4 Mol./Area(0-6) = -4.99-11 Mol./Area(2-6) = -2.60-11 Spec. S.A. = 1-11

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	56 DYS	70 DYS
DELTA CONC.	-2.30	-2.70	-2.10	-1.60	-2.00	-1.40	-1.40	-1.30	-9.00	-1.30
LAYERS LOST	-6.02	-3	-1.31	-2	-2.80	-2	-3.17	-2	-5.53	-1
Z VOL. LOST	-1.33	-4	-2.89	-6	-5.04	-4	-7.01	-4	-7.83	-2
Avg. Flux	-2.15	-15	-1.95	-16	-3.96	-17	-2.42	-17	-1.68	-17
Ins. Flux	-2.15	-15	-1.10	-16	-1.36	-17	-8.93	-18	-1.11	-17

	86 DYS	98 DYS	112 DYS
DELTA CONC.	-4.00	-1.30	-7.00
LAYERS LOST	-4.55	-4.89	-5.08
X VOL. LOST	-1.00	-1.08	-1.12
AVG. PLUX	-8.00	-7.06	-7.17
IRIS. FLUX	-1.11	-1.63	-1.95

BENTONITE (CRC) (CONT.)

pH = 7.9-8.0 MicroM Dis. Si = 364.0 Mol./Area(0-6) = 1.95-11 Mol./Area(2-6) = 1.07-11 Spec. S.A. = 4.00 1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	-2.00	1	-3.70	1	-3.70	1	-3.80	1	-2.10	1	-1.80	1	-2.00	1	-1.80	1
LAYERS LOST	-1.25	-3	-3.59	-3	-5.92	-3	-8.31	-3	-9.63	-3	-1.07	-2	-1.20	-2	-1.31	-2
X VOL. LOST	-6.75	-5	-1.92	-4	-3.17	-4	-4.45	-4	-5.16	-4	-5.77	-4	-6.44	-4	-7.05	-4
Avg. FLUX	-5.20	-16	-6.18	-17	-1.45	-17	-1.02	-17	-7.90	-18	-6.62	-18	-5.92	-18	-5.39	-18
INS. FLUX	-5.20	-16	-4.18	-17	-6.69	-18	-5.89	-18	-3.25	-18	-2.79	-18	-3.10	-18	-2.79	-18

pH = 7.8-8.0 MicroM Dis. Si = 781.0 Mol./Area(0-6) = 8.01-11 Mol./Area(2-6) = 2.88-11 Spec. S.A. = 4.00 1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	-1.50	2*	-2.31	2	-1.66	2	-1.02	2	-6.80	1	-3.60	1	-5.10	1	-5.10	1
LAYERS LOST	-9.44	-3	-2.39	-2	-1.44	-2	-4.08	-2	-4.51	-2	-4.74	-2	-5.06	-2	-5.38	-2
X VOL. LOST	-5.06	-4	-1.28	-3	-1.84	-3	-2.19	-3	-2.61	-3	-2.54	-3	-2.71	-3	-2.88	-3
Avg. FLUX	-3.90	-15	-4.13	-16	-8.47	-17	-5.03	-17	-3.70	-17	-2.91	-17	-2.49	-17	-2.20	-17
INS. FLUX	-3.90	-15	-2.61	-16	-3.00	-17	-1.58	-17	-1.05	-17	-5.58	-18	-7.90	-18	-7.90	-18

pH = 7.9-8.0 MicroM Dis. Si = 364.0 Mol./Area(0-6) = 1.76-11 Mol./Area(2-6) = 9.73-12 Spec. S.A. = 4.00 1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	-2.00	1*	-3.70	1	-3.70	1	-3.80	1	-2.10	1	-1.80	1	-2.00	1	-1.80	1
LAYERS LOST	-1.13	-3	-3.24	-3	-5.36	-3	-7.50	-3	-8.70	-3	-9.72	-3	-1.08	-2	-1.18	-2
X VOL. LOST	-6.75	-5	-1.92	-4	-3.17	-4	-4.45	-4	-5.16	-4	-5.77	-4	-6.44	-4	-7.05	-4
Avg. FLUX	-4.70	-16	-5.58	-17	-3.31	-17	-2.93	-18	-7.13	-18	-5.98	-18	-5.34	-18	-4.88	-18
INS. FLUX	-4.70	-16	-3.78	-17	-6.04	-18	-5.31	-18	-2.93	-18	-2.51	-18	-2.79	-18	-2.51	-18

pH = 7.8-8.0 MicroM Dis. Si = 781.0 Mol./Area(0-6) = 7.89-11 Mol./Area(2-6) = 2.84-11 Spec. S.A. = 4.06 1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	-1.50	2*	-2.31	2	-1.66	2	-1.02	2	-6.80	1	-3.60	1	-5.10	1	-5.10	1
LAYERS LOST	-9.30	-3	-2.36	-2	-3.39	-2	-4.02	-2	-4.44	-2	-4.67	-2	-4.98	-2	-5.30	-2
X VOL. LOST	-5.06	-4	-1.28	-3	-1.84	-3	-2.19	-3	-2.61	-3	-2.54	-3	-2.71	-3	-2.88	-3
Avg. FLUX	-3.84	-15	-4.07	-16	-8.35	-17	-4.95	-17	-3.64	-17	-2.87	-17	-2.45	-17	-2.17	-17
INS. FLUX	-3.84	-15	-2.57	-16	-2.95	-17	-1.55	-17	-1.03	-17	-5.49	-18	-7.78	-18	-7.78	-18

EPIDOTE

Den. = 3.40 Form. Wt. = 498 # Si Atoms / Form. = 3 Spec. S. A. = .88 Total S. A. = 1.76 Mol. Vol. = 146.4
 L Thickness = 6.25 - 8 Vol./L = 1.10 - 3 Mol./L = 7.51 - 6 Mol. Si/L = 2.25 - 5 S.A./cc = 2.34 2 Part. Rad. = 1.00 - 4
 pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 7.88-10 Mol./Area(2-6) = 5.95-10 Spec. S.A. = 6.80 - 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	1.00	2.30	1.80	1.70	1.90	2.50	2.90
LAYERS LOST	8.61	-3	5.16	-2	1.50	-1	3.83	-1
Z VOL. LOST	1.24	-5	7.66	-5	2.17	-4	5.54	-4
Avg. FLUX	3.06-15		7.65-16	3.18-16	2.41-16	2.12-16	2.02-16	2.07-16
INS. FLUX	3.06-15		6.66-16	2.44-16	1.64-16	1.55-16	1.73-16	2.27-16

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-3.00	1.00	6.00	6.00	4.00	-2.00	1.00	7.00
LAYERS LOST	-1.23	-2	-8.24	-3	1.64	-2	4.94	-2
Z VOL. LOST	-1.86	-5	-1.24	-5	4.12	-2	8.07	-1
Avg. FLUX	-4.40-15		-1.22	-16	2.48	-5	7.47	-5
INS. FLUX	-4.40-15		6.37-17	6.11-17	3.49-17	4.36-17	2.61-17	2.09-17

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	7.00	1.10	2.60	1	1.90	1	1.80	1
LAYERS LOST	3.86	-2	9.94	-2	2.43	-2	4.69	-1
Z VOL. LOST	4.35	-5	1.12	-4	2.73	-4	5.29	-4
Avg. FLUX	1.37-14		1.67-15	5.14-16	3.68-16	3.31-16	3.01-16	2.73-16
INS. FLUX	1.37-14		9.39-16	3.54-16	2.22-16	2.57-16	2.10-16	1.63-16

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	5.00	8.00	9.00	14	8.00	8.00	7.00	4.00
LAYERS LOST	2.39	-2	6.23	-2	1.05	-1	1.82	-1
Z VOL. LOST	3.11	-5	8.09	-5	1.36	-4	2.36	-4
Avg. FLUX	8.53-15		9.24-16	2.23-16	1.52-16	1.28-16	1.14-16	9.75-17
INS. FLUX	8.53-15		5.93-16	1.06-16	8.13-17	8.13-17	7.11-17	4.06-17

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HORNBLENDE

Den. = 3.20 Tom. Wt. = 8.37 # Si Atoms / Form. = 7 Spec. S. A. = .72 Total S. A. = 1.44 Mol. Vol. = 261.5
 L Thickness = 7.58 -8 Vol./L = 1.09 -3 Mol./L = 4.17 -6 Mol. Si/L = 2.92 -5 S.A./cc = 1.92 2 Part. Rad. = 1.30 -4
 pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 5.10-10 Mol./Area(2-6) = 3.90-10 Spec. S.A. = 7.20 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	7.00	1.40	1.30	1.60	1.30	1.50	1.80
LAYERS LOST	5.13 -3	2.30 -2	5.90 -2	9.23 -2	1.33 -1	1.66 -1	2.05 -1	2.51 -1
Z VOL. LOST	8.96 -6	4.03 -5	1.03 -4	1.61 -4	2.33 -4	2.91 -4	3.58 -4	4.39 -4
Avg. FLUX	2.89 -15	5.42 -16	1.98 -16	1.55 -16	1.49 -16	1.39 -16	1.37 -16	1.40 -16
INS. FLUX	2.89 -15	4.40 -16	1.40 -16	1.11 -16	1.37 -16	1.11 -16	1.29 -16	1.55 -16

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 2.30-10 Mol./Area(2-6) = 1.48-10 Spec. S.A. = 1.19

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	5.00	1.80	1.00	1.10	1.00	1.00	1.00
LAYERS LOST	4.65 -3	1.24 -2	4.03 -2	5.58 -2	7.29 -2	8.84 -2	1.00 -1	1.13 -1
Z VOL. LOST	1.34 -5	3.58 -5	1.16 -4	1.61 -4	2.10 -4	2.55 -4	2.91 -4	3.27 -4
Avg. FLUX	2.62 -15	2.91 -16	1.35 -16	9.37 -17	8.16 -17	7.42 -17	6.77 -17	6.39 -17
INS. FLUX	2.62 -15	1.90 -16	1.09 -16	5.21 -17	5.73 -17	5.21 -17	4.16 -17	4.16 -17

pH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = 6.24-11 Mol./Area(2-6) = 6.24-11 Spec. S.A. = 7.80 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	0.00	1.00	-1.00	2.00	1.00	3.00	5.00	7.00
LAYERS LOST	0.00	2.35 -3	0.00	4.73 -3	9.47 -3	1.18 -2	3.55 -2	5.00 -2
Z VOL. LOST	0.00	4.43 -6	0.00	8.96 -6	1.79 -5	2.24 -5	3.58 -5	5.82 -5
Avg. FLUX	0.00	5.56 -17	0.00	7.94 -18	1.05 -17	9.93 -18	1.27 -17	1.72 -17
INS. FLUX	0.00	5.80 -17	-9.27 -18	1.58 -17	1.58 -17	7.94 -18	2.38 -17	1.49 -17

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -2.47-10 Mol./Area(2-6) = -1.05-10 Spec. S.A. = 8.50 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-9.00	-1.10	-1.20	-9.00	-1.10	-2.00	-2.00	-2.00
LAYERS LOST	-1.95 -2	-4.34 -2	-6.95 -2	-8.90 -2	-1.12 -1	-1.17 -1	-1.21 -1	-1.19 -1
Z VOL. LOST	-4.03 -5	-8.96 -5	-1.43 -4	-1.83 -4	-2.33 -4	-2.42 -4	-2.51 -4	-2.46 -4
Avg. FLUX	-1.10 -14	-1.02 -15	-2.31 -16	-1.49 -16	-1.26 -16	-9.84 -17	-8.16 -17	-5.28 -17
INS. FLUX	-1.10 -14	-5.86 -16	-1.02 -16	-6.56 -17	-8.02 -17	-1.45 -17	-1.45 -17	-1.09 -17

pH = 7.6-7.9 MicroM Dis. Si = 205.0 Mol./Area(0-6) = 2.10-11 Mol./Area(2-6) = 8.42-12 Spec. S.A. = 8.90 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	0.00	0.00	3.00	4.00	3.00	-2.00	0.00	-3.00
LAYERS LOST	0.00	0.00	6.22 -3	1.45 -2	2.07 -2	1.66 -2	1.66 -2	1.03 -2
Z VOL. LOST	0.00	0.00	1.36 -5	3.13 -5	4.48 -5	3.58 -5	3.58 -5	2.24 -5
Avg. FLUX	0.00	0.00	2.09 -17	2.43 -17	2.32 -17	1.39 -17	1.11 -17	5.80 -18
INS. FLUX	0.00	0.00	2.43 -17	2.78 -17	2.09 -17	1.39 -17	0.00	-2.09 -17

pH = 7.9-8.1 MicroM Dis. Si = 205.0 Mol./Area(0-6) = -1.45-10 Mol./Area(2-6) = -1.11-11 Spec. S.A. = 6.70 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	-4.00	-1.80	1.00	-1.00	-5.00	-5.00	-3.00
LAYERS LOST	-5.51 -3	-1.65 -2	-6.61 -2	-6.36 -2	-6.61 -2	-7.99 -2	-7.99 -2	-3.00 -2
Z VOL. LOST	-8.96 -6	-2.69 -5	-1.07 -4	-1.03 -4	-1.07 -4	-1.30 -4	-1.30 -4	-1.16 -4
Avg. FLUX	-3.10 -15	-3.88 -16	-2.22 -16	-1.06 -16	-7.40 -17	-6.70 -17	-5.36 -17	-4.01 -17
INS. FLUX	-3.10 -15	-2.70 -16	-1.94 -16	9.25 -18	-9.25 -18	-4.62 -17	-4.62 -17	0.00

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HYALOCLASTITE

Dens. = 3.90 Form. Wt. = 116 # Si Atoms / Form. = 1 Spec. S. A. = .56 Total S. A. = 1.12 Mol. Vol. = 29.7
L Thickness = 3.67 -8 Vol./L = 4.11 -4 Mol./L = 1.38 -5 Mol. Si/L = 1.38 -5 S.A./cc = 1.49 2 Part. Rad. = 1.37 -4

pH = 7.6-7.9 MicroN Dis. Si = 3.9 Mol./Area(0-6) = 4.27-10 Mol./Area(2-6) = 2.75-10 Spec. S.A. = 6.40 -1

	1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	49 DYS	56 DYS	
DELTA CONC.	5.00	8.00	1.30	1	1.10	1	9.00	9.00	9.00	9.00	9.00	
LAYERS LOST	2.37	-2	6.16	-2	1.23	-1	1.75	-1	2.18	-1	2.60	-1
Z VOL. LOST	2.17	-5	5.65	-5	1.13	-4	1.60	-4	2.00	-4	2.39	-4
Avg. FLUX	8.13-15		8.81-16		2.51-16		1.79-16		1.48-16		1.33-16	
Ins. FLUX	8.13-15		5.66-16		1.46-16		1.06-16		8.71-17		8.71-17	

pH = 8.3-8.5 MicroN Dis. Si = 105.4 Mol./Area(0-6) = 6.46-11 Mol./Area(2-6) = 3.87-11 Spec. S.A. = 5.80 -1

	1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	49 DYS	56 DYS	
DELTA CONC.	1.00	-3.00	-2.00	0.00	0.00	0.00	-3.00	-2.00	-1.00	-2.00	-2.00	
LAYERS LOST	5.23	-3	-1.04	-2	-2.09	-2	-2.09	-2	-3.66	-2	-5.23	-2
Z VOL. LOST	4.34	-6	-8.69	-6	-1.73	-5	-1.73	-5	-3.04	-5	-4.34	-5
Avg. FLUX	1.79-15	-5	-1.49-16	-4	-2.27-17	-2	-2.13-17	-0.00	-1.87-17	-1.92-17	-1.78-17	-1.50-17
Ins. FLUX	1.79-15	-6	-2.34-16	-2	-2.49-17	-0.00	0.00	-3.20-17	-2.13-17	-1.06-17	-1.06-17	-1.06-17

pH = 7.6-7.9 MicroN Dis. Si = 101.7 Mol./Area(0-6) = 6.46-11 Mol./Area(2-6) = 7.75-11 Spec. S.A. = 5.80 -1

	1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	49 DYS	56 DYS
DELTA CONC.	-1.00	-2.00	1.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
LAYERS LOST	-5.23	-3	-1.56	-2	-1.04	-2	0.00	2.09	2	3.13	-2
Z VOL. LOST	-4.34	-6	-1.30	-5	-8.69	-6	0.00	1.73	-5	2.60	-5
Avg. FLUX	-1.79-15	-5	-2.24-16	-2	-1.13-17	0.00	1.24-17	1.42-17	1.60-17	1.71-17	1.78-17
Ins. FLUX	-1.79-15	-6	-1.56-16	1	2.13-17	2.13-17	4.27-17	2.13-17	2.13-17	2.13-17	2.13-17

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HYPERSTHENE

Den. = 3.90 Form. Wt. = 116 # Si Atoms / Form. = 1		Spec. S. A. = 1.10 Total S. A. = 2.20 Mol. Vol. = 29.7	
L Thickness = 3.67 -8 Vol./L = 8.08 -4 Mol./L = 2.71 -5		Mol. Si/L = 2.71 -5 S.A./cc = 2.93 2 Part. Rad. = 6.99 -5	
pH = 8.3-8.5	MicroN Dis. Si = 1.8 Mol./Area(0-6) = 7.14-10	Mol./Area(2-6) = 4.81-10 Spec. S.A. = 1.06	
DELTA CONC.	5.00 1 HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS		
LAYERS LOST	1.43 -2 2.00 1 4.00 1 3.10 1 2.30 1 2.70 1		
Z VOL. LOST	2.17 -5 7.44 -2 1.88 -1 2.86 -1 4.35 -1 5.00 -1		
Avg. FLUX	4.91 -15 1.13 -4 2.87 -4 4.34 -4 5.69 -4 6.61 -4		
INS. FLUX	4.91 -15 1.06 -15 3.86 -16 2.92 -16 2.55 -16 2.22 -16		
		1.98 -16 1.81 -16 1.22 -16 1.34 -16 1.57 -16	
 pH = 7.6-7.9 MicroN Dis. Si = 3.9 Mol./Area(0-6) = 5.65-10 Mol./Area(2-6) = 3.35-10 Spec. S.A. = 1.34			
DELTA CONC.	1.00 HR* 2.00 1 5.20 1 3.20 1 2.60 1 2.20 1 2.00 1¢		
LAYERS LOST	2.26 -1 6.79 -2 1.85 -1 2.58 -1 3.17 -1 3.66 -1 4.12 -1		
Z VOL. LOST	4.34 -5 1.30 -4 3.56 -4 4.95 -4 6.08 -4 7.04 -4 7.91 -4		
Avg. FLUX	7.77 -15 9.71 -16 3.79 -16 2.63 -16 2.15 -16 1.87 -16 1.68 -16		
INS. FLUX	7.77 -15 6.75 -16 2.80 -16 1.48 -16 1.20 -16 1.01 -16 9.25 -17		
 pH = 8.3-8.5 MicroN Dis. Si = 105.4 Mol./Area(0-6) = 4.30-10 Mol./Area(2-6) = 3.82-10 Spec. S.A. = 9.40 -1			
DELTA CONC.	3.00 1 HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS		
LAYERS LOST	-9.68 -3 9.68 -3 3.87 -2 9.68 -2 1.25 -1 1.93 -1 2.30 1 2.50 1 2.60 1		
Z VOL. LOST	-1.30 -5 1.30 -5 5.21 -5 1.38 -5 1.30 -4 1.69 -4 2.60 -4 3.48 -1 3.67 -1 5.13 -1		
Avg. FLUX	-3.32 -15 1.38 -16 7.91 -17 9.89 -17 8.57 -17 9.89 -17 8.69 -17 3.61 -4 4.69 -4 5.78 -4 6.91 -4		
INS. FLUX	-3.32 -15 2.89 -16 6.92 -17 1.18 -16 5.93 -17 1.38 -16 1.09 -16 1.09 -16 1.18 -16 1.04 -16 1.51 -16 1.64 -16 8.24 -17 8.57 -17		
 pH = 7.6-7.9 MicroN Dis. Si = 101.7 Mol./Area(0-6) = 3.20-10 Mol./Area(2-6) = 1.94-10 Spec. S.A. = 1.10			
DELTA CONC.	4.00 1 HR* 7.00 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS		
LAYERS LOST	1.10 -2 3.03 -2 1.02 -1 1.40 -1 1.30 1 1.00 1 1.00 1¢		
Z VOL. LOST	1.73 -5 4.78 -5 1.60 -4 2.21 -4 2.78 -4 3.21 -4 3.65 -4 3.65 -4 2.31 -1 2.59 -1 4.08 -4		
Avg. FLUX	3.78 -15 4.34 -16 2.08 -16 1.43 -16 1.20 -16 1.04 -16 9.46 -17 8.83 -17 8.83 -17 5.63 -17 5.63 -17		
INS. FLUX	3.78 -15 2.88 -16 1.70 -16 7.89 -17 7.32 -17 5.63 -17 5.63 -17 5.63 -17 5.63 -17 5.63 -17		

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HYPERTHENE (CONT.)

	pH = 8.3-8.5	MicroM Dis. Si = 205.0	Mol./Area(0-6) = -9.74-12	Mol./Area(2-6) = 8.52-11	Spec. S.A. = 1.54				
HR	1	1 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	56 DYS	70 DYS
DELTA CONC.	-1.00	-2.10	-8.00	5.00	1.00	1.00	1.00	1.00	1.00
LAYERS LOST	-1.97	-6.10	-7.68	-6.69	-4.13	-4.13	-4.13	-4.13	-4.13
Z VOL. LOST	-4.34	-1.34	-1.69	-1.67	-1.34	-1.34	-1.34	-1.34	-1.34
Avg. FLUX	-6.75	-8.73	-1.57	-6.84	-4.16	-4.16	-4.16	-4.16	-4.16
Ins. FLUX	-6.76	-6.17	-3.75	-2.01	-1.20	-1.20	-1.20	-1.20	-1.20

	pH = 7.9-8.0	MicroM Dis. Si = 364.0	Mol./Area(0-6) = -2.46-10	Mol./Area(2-6) = -1.03-10	Spec. S.A. = 1.20				
HR	1	1 DYS	7 DYS	21 DYS	28 DYS	35 DYS	42 DYS		
DELTA CONC.	-1.00	-2.00	-1.60	-1.60	-1.10	-2.00	-2.00	-2.00	-2.00
LAYERS LOST	-2.52	-7.58	-1.16	-1.16	-1.84	-1.89	-1.89	-1.94	-1.94
Z VOL. LOST	-4.34	-1.30	-2.00	-2.00	-3.17	-3.26	-3.26	-3.34	-3.34
Avg. FLUX	-8.68	-1.08	-2.37	-2.37	-1.60	-1.25	-1.25	-0.95	-0.95
Ins. FLUX	-8.68	-7.54	-9.64	-8.26	-5.68	-5.68	-5.68	-1.03	-1.03

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ILLITE

Den. = 2.80 Form. Wt. = 398 # Si Atoms / Form. = 3 Spec. S. A. = 34.00 Total S. A. = 68.00 Mol. Vol. = 142.1
 L Thickness = 6.19 - 8 Vol./L = 4.20 - 2 Mol./L = 2.96 - 4 Mol. Si/L = 8.88 - 4 S.A./cc = 9.06 3 Part. Rad. = 3.15 - 6
 pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 2.67-11 Mol./Area(2-6) = 1.45-11 Spec. S.A. = 2.03 1
 pH = 8.3-8.5 MicroM Dis. Si = 1.0 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 1.70 HR 2.40 1 2.40 1 2.50 1 1.80 1 1.40 1 1.40 1 1.40 1 1.40 1
 2.40 -3 5.79 -3 9.33 -3 1.20 -2 1.45 -2 1.65 -2 1.85 -2 2.04 -2
 8.45 -5 2.03 -4 3.28 -4 4.22 -4 5.12 -4 5.82 -4 6.51 -4 7.21 -4
 8.72 -16 8.76 -17 2.01 -17 1.29 -17 1.06 -17 8.93 -18 8.00 -18 7.38 -18
 INS. FLUX 5.35 -17 8.90 -18 5.80 -18 5.49 -18 4.27 -18 4.27 -18 4.27 -18 4.27 -18

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 3.50-11 Mol./Area(2-6) = 8.55-12 Spec. S.A. = 3.07 1
 pH = 7.6-7.9 MicroM Dis. Si = 55.0 Mol./Area(0-6) = 9.60-12 Mol./Area(2-6) = 7.35-12 Spec. S.A. = 2.50 1
 pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 2.75-11 Mol./Area(2-6) = 1.7-3-11 Spec. S.A. = 3.02 1
 pH = 8.3-8.5 MicroM Dis. Si = 1.0 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS 56 DYS 56 DYS 70 DYS
 1.00 HR 8.00 -8.00 -7.00 -1.00 1 -1.00 1 -1.00 1 -1.00 1 -1.00 1 -1.00 1 -1.00 1 -1.00 1 -1.00 1
 8.00 -9.18 -9.18 -7.72 -3 -2.86 -3 -4.01 -3 -5.05 -3 -6.19 -3 -7.34 -3 -8.15 -3 -8.83 -3
 8.00 -5.97 -5.97 -7.46 -5 -1.24 -4 -1.74 -4 -2.18 -4 -2.68 -4 -3.18 -4 -3.53 -4 -3.83 -4
 8.00 -1.38 -1.38 -3.72 -18 -3.72 -18 -2.89 -18 -2.72 -18 -2.64 -18 -2.20 -18 -1.90 -18
 8.00 -1.44 -17 -2.02 -18 -2.48 -18 -2.48 -18 -2.23 -18 -2.48 -18 -2.48 -18 -2.48 -18 -2.48 -18
 INS. FLUX -3.89 -17 -8.38 -18 -6.56 -18 -6.77 -18 -5.13 -18 -5.54 -18 -5.13 -18 -5.54 -18 -5.13 -18

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 1.29-11 Mol./Area(2-6) = 8.24-12 Spec. S.A. = 3.41 1
 pH = 7.6-7.9 MicroM Dis. Si = 1.0 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS 56 DYS 56 DYS 70 DYS
 1.00 HR 1.41 -1.50 1 -1.80 1 -1.50 1 -1.50 1 -1.50 1 -1.50 1 -1.50 1 -1.50 1 -1.50 1 -1.50 1
 8.41 -4 8.41 -4 1.24 -4 2.47 -3 1.52 -3 2.88 -4 3.63 -4 4.40 -3 5.40 -3 6.40 -3 7.40 -3
 8.47 -5 8.47 -5 1.38 -17 4.35 -18 3.93 -18 5.22 -18 6.42 -18 7.42 -18 8.42 -18 9.42 -18
 8.05 -16 8.05 -16 3.18 -17 7.81 -18 5.22 -18 6.42 -18 7.42 -18 8.42 -18 9.42 -18 10.42 -18
 8.05 -16 8.05 -16 1.99 -17 3.81 -18 1.02 -18 -2.72 -18 -2.72 -18 -2.72 -18 -2.72 -18 -2.72 -18

KAOLINITE

Den. = 2.60 Form. Wt. = 516 # Si Atoms / Form. = 4 Spec. S. A. = 8.60 Total S. A. = 17.20 Mol. Vol. = 198.4
 L Thickness = 6.91 -8 Vol./L = 1.19 -2 Mol./L = 5.99 -5 Mol. Si/L = 2.39 -4 S.A./cc = 2.29 3 Part. Rad. = 1.34 -5

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 6.99-12 Mol./Area(2-6) = 8.39-12 Spec. S.A. = 8.04

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	-1.00	0.00	1.00	2.00	4.00	5.00	6.00
LAYERS LOST	-6.68	-4	-1.00	-3	-6.68	-4	1.33	-3
Z VOL. LOST	-9.67	-6	-1.45	-5	-1.45	-5	1.93	-5
Avg. FLUX	-2.59	-16	-1.61	-17	-2.31	-18	-7.71	-19
INS. FLUX	-2.59	-16	-5.63	-18	0.00	1.54	-18	3.08

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 2.69-12 Mol./Area(2-6) = 6.29-12 Spec. S.A. = 8.34

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	-4.00	-2.00	2.00	3.00	3.00	3.00	3.00
LAYERS LOST	-6.44	-4	-1.93	-3	-1.93	-3	-9.67	-4
Z VOL. LOST	-9.67	-6	-2.90	-5	-3.86	-5	-1.45	-5
Avg. FLUX	-2.49	-16	-3.12	-17	-5.94	-18	-7.43	-19
INS. FLUX	-2.49	-16	-2.17	-17	-1.73	-18	-1.48	-18

pH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = -6.00-11 Mol./Area(2-6) = -1.89-11 Spec. S.A. = 8.30

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-4.00	1	-3.10	-2	-1.70	1	-7.00	-5
LAYERS LOST	-1.29	-2	-2.30	-2	-2.94	-2	-3.72	-2
Z VOL. LOST	-1.93	-4	-3.43	-4	-6.40	-4	-5.56	-4
Avg. FLUX	-5.02	-15	-3.71	-16	-6.79	-17	-4.03	-17
INS. FLUX	-5.02	-15	-1.69	-16	-1.74	-17	-1.26	-17

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -1.17-10 Mol./Area(2-6) = -4.88-11 Spec. S.A. = 8.60

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-5.80	1	-5.40	1	-4.20	1	-3.10	1
LAYERS LOST	-1.81	-2	-3.59	-2	-4.90	-2	-5.87	-2
Z VOL. LOST	-2.80	-4	-5.56	-4	-7.59	-4	-9.09	-4
Avg. FLUX	-7.02	-15	-5.80	-16	-6.13	-16	-6.77	-17
INS. FLUX	-7.02	-15	-3.00	-16	-3.53	-17	-2.23	-17

pH = 7.6-7.9 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -4.68-11 Mol./Area(2-6) = 4.01-12 Spec. S.A. = 8.40

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-5.40	1	-5.40	1	-6.00	1	6.00	0.00
LAYERS LOST	-1.72	-2	-3.45	-2	-3.64	-2	-3.55	-2
Z VOL. LOST	-2.61	-4	-5.22	-4	-8.61	-4	-5.36	-4
Avg. FLUX	-6.69	-15	-5.58	-16	-8.61	-17	-6.63	-17
INS. FLUX	-6.69	-15	-2.91	-16	-5.16	-18	-2.95	-18

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K-FELDSPAR

Den. = 2.56 Fom. Wt. = 278 # Si Atoms / Fom. = 3 Spec. S. A. = .75 Total S. A. = 1.50 Mol. Vol. = 108.5
 L Thickness = 5.65 -8 Vol./L = 8.48 -4 Mol./L = 7.81 -6 Mol. Si/L = 2.34 -5 S.A./cc = 2.00 2 Part. Rad. = 1.56 -4
 pH = 8.1-8.3 MicroM Dis. Si = 5.6 Mol./Area(0-6) = 3.87-10 Mol./Area(2-6) = 2.15-10 Spec. S.A. = 6.10 -1

DELTA CONC.	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	6.00	1.00	1.20	1.00	7.00	7.00	6.00	6.00
Z VOL. LOST	2.35	-2	6.29	-2	1.10	-1	1.72	-1
Avg. FLUX	2.08	-5	5.56	-5	9.73	-5	1.52	-4
INS. FLUX	1.02	-14	1.13	-15	2.84	-16	1.88	-16
					1.49	-16	1.29	-16
					1.88	-16	1.15	-16
					2.42	-16	1.09	-17
					9.14	-17	7.11	-17
							6.09	-17

pH = 7.6-7.8 MicroM Dis. Si = 3.0 Mol./Area(0-6) = 1.65-10 Mol./Area(2-6) = 1.04-10 Spec. S.A. = 6.10 -1

DELTA CONC.	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	3.00	3.00	4.00	3.00	3.00	3.00	4.00	4.00
Z VOL. LOST	1.17	-2	2.35	-2	3.93	-2	5.11	-2
Avg. FLUX	1.04	-5	2.08	-5	3.47	-5	4.51	-5
INS. FLUX	5.12	-15	4.26	-16	1.01	-16	6.60	-17
					4.74	-17	5.42	-17
					3.04	-17	4.82	-17
							4.67	-17
							4.57	-17
							4.06	-17

pH = 7.8-8.0 MicroM Dis. Si = 114.0 Mol./Area(0-6) = -2.77-10 Mol./Area(2-6) = -9.72-11 Spec. S.A. = 8.10 -1

DELTA CONC.	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
LAYERS LOST	-1.00	-1.40	-1.50	-1.20	-1.20	-1.00	-2.00	-2.00
Z VOL. LOST	-2.96	-2	-7.10	-2	-1.15	-1	-1.51	-1
Avg. FLUX	-3.47	-5	-8.34	-5	-1.35	-4	-1.77	-4
INS. FLUX	-1.28	-14	-1.28	-15	-2.98	-16	-1.95	-16
					-1.50	-16	-1.16	-16
					-1.33	-16	-1.12	-17
					-7.82	-16	-9.18	-17
							-1.53	-17
							-7.65	-18

Kyanite

Dens. = 3.60 Form. Wt. = 162 # Si Atoms. / Form. = 1 Spec. S. A. = .94 Total S. A. = 1.88 Mol. Vol. = 45.0
 L. Thickness = 4.21 -8 Vol./L = 7.93 -4 Mol./L = 1.76 -5 Mol. S1/L = 1.76 -5 S.A./cc = 2.50 2 Part. Rad. = 8.86 -5
 PH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 3.40-10 Mol./Area(2-6) = 2.32-10 Spec. S.A. = 6.60 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.00	6.00	9.00	6.00	8.00	8.00	9.00	1.00
LAYERS LOST	2.42 -2	6.05 -2	1.15 -1	1.51 -1	2.00 -4	2.48 -1	3.02 -1	3.63 -1
Z VOL. LOST	2.42 -5	6.07 -5	1.15 -4	1.51 -4	2.00 -4	2.49 -4	3.03 -4	3.64 -4
AVG. FLUX	6.31 -15	6.57 -16	1.17 -16	1.17 -16	1.03 -16	9.62 -17	9.39 -17	9.39 -17
INS. FLUX	6.31 -15	4.11 -16	9.86 -17	5.63 -17	7.51 -17	8.45 -17	9.39 -17	

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 1.56-10 Mol./Area(2-6) = 9.37-11 Spec. S.A. = 8.40 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	3.00	4.00	7.00	4.00	5.00	4.00	4.00	4.00
LAYERS LOST	1.42 -2	3.33 -2	6.66 -2	8.56 -2	1.09 -1	1.28 -1	1.47 -1	1.66 -1
Z VOL. LOST	1.82 -5	2.50 -5	8.50 -5	1.09 -4	1.39 -4	1.64 -4	1.88 -4	2.12 -4
AVG. FLUX	3.72 -15	3.61 -16	1.03 -16	6.64 -17	5.65 -17	4.55 -17	4.30 -17	
INS. FLUX	3.72 -15	2.15 -16	6.02 -17	2.95 -17	3.69 -17	2.95 -17	2.95 -17	

pH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = -1.43-10 Mol./Area(2-6) = -8.73-11 Spec. S.A. = 7.30 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-1.00	-4.00	-6.00	-3.00	-4.00	-5.00	-3.00	-2.00
LAYERS LOST	-5.47 -3	-2.73 -2	-6.02 -2	-7.66 -2	-9.86 -2	-1.26 -1	-1.42 -1	-1.53 -1
Z VOL. LOST	-6.07 -6	-3.03 -5	-6.68 -5	-8.50 -5	-1.09 -4	-1.39 -4	-1.57 -4	-1.70 -4
AVG. FLUX	-1.42 -15	-2.37 -16	-9.34 -17	-5.94 -17	-5.09 -17	-4.88 -17	-4.41 -17	-3.96 -17
INS. FLUX	-1.42 -15	-2.48 -16	-5.94 -17	-2.54 -17	-3.39 -17	-4.24 -17	-2.54 -17	-1.69 -17

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -4.54-10 Mol./Area(2-6) = -2.10-10 Spec. S.A. = 8.00 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-1.20	-2.00	-2.00	-1.30	-1.20	-1.00	-6.00	-4.00
LAYERS LOST	-5.99 -2	-1.59 -1	-2.59 -1	-3.24 -1	-3.84 -1	-4.34 -1	-4.84 -1	-5.00 -1
Z VOL. LOST	-7.29 -5	-1.94 -4	-3.15 -4	-3.94 -4	-4.67 -4	-5.28 -4	-5.89 -4	-6.09 -4
AVG. FLUX	-1.56 -14	-1.73 -15	-4.03 -16	-2.51 -16	-1.98 -16	-1.68 -16	-1.44 -16	-1.25 -16
INS. FLUX	-1.56 -14	-1.13 -15	-1.80 -16	-1.00 -16	-9.30 -17	-7.75 -17	-4.65 -17	-3.10 -17

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = -1.70-10 Mol./Area(2-6) = -7.50-11 Spec. S.A. = 5.50 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-3.00	-5.00	-6.00	-4.00	0.00	-3.00	-2.00	-2.00
LAYERS LOST	-2.18 -2	-5.81 -2	-1.01 -1	-1.30 -1	-1.30 -1	-1.52 -1	-1.67 -1	-1.81 -1
Z VOL. LOST	-1.82 -5	-4.86 -5	-8.50 -5	-1.09 -4	-1.09 -4	-1.27 -4	-1.39 -4	-1.51 -4
AVG. FLUX	-5.68 -15	-6.31 -16	-1.57 -16	-1.01 -16	-6.76 -17	-5.91 -17	-5.18 -17	-6.69 -17
INS. FLUX	-5.68 -15	-4.11 -16	-7.89 -17	-4.50 -17	0.00	-3.38 -17	-2.25 -17	-2.25 -17

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MONTMORILLONITE

Den. = 2.00 Fom. Wt. = 360 # Si Atoms / Fom. = 4 Spec. S. A. = 66.00 Total S. A. = 132.00 Mol. Vol. = 180.0
 L Thickness = 6.69 -8 Vol./L = 8.84 -2 Mol./L = 4.91 -4 Mol. S1/L = 1.96 -3 S.A./cc = 1.76 4 Part. Rad. = 2.27 -6

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 5.46-11 Mol./Area(2-6) = 2.96-11 Spec. S.A. = 5.51 1
 DELTA CONC. 1.04 HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 LAYERS LOST 4.75 -3 1.38 2 1.26 2 1.04 2 9.50 1 7.90 1 7.80 1
 Z VOL. LOST 3.51 -4 8.16 -2 1.28 -2 2.15 -2 2.59 -2 2.93 -2 3.67 -2
 AVG. FLUX 1.96-15 1.90-16 4.16-17 2.65-17 2.12-17 1.81-17 2.44-17 2.18-17 2.46-17 2.71-17
 INS. FLUX 1.96-15 1.13-16 1.65-17 1.17-17 1.06-17 8.88-18 8.88-18 8.88-18 8.77-18

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 6.99-11 Mol./Area(2-6) = 3.59-11 Spec. S.A. = 5.31 1
 DELTA CONC. 1.00 HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 LAYERS LOST 4.74 -3 1.44 -2 2.28 -2 2.95 -2 3.49 -2 3.93 -2 4.30 1 8.00 1
 Z VOL. LOST 3.37 -4 1.02 -3 1.62 -3 2.09 -3 2.48 -3 2.80 -3 3.07 -3 3.69 -2
 AVG. FLUX 1.96-15 2.69-16 5.61-17 3.62-17 2.86-17 2.42-17 2.12-17 1.92-17
 INS. FLUX 1.96-15 1.74-16 2.39-17 1.64-17 1.34-17 1.08-17 9.36-18 9.34-18

pH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = 1.72-10 Mol./Area(2-6) = 6.62-11 Spec. S.A. = 8.10
 DELTA CONC. 8.00 1 HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS 56 DYS 70 DYS
 LAYERS LOST 2.48 -2 5.03 -1 6.80 1 6.50 1 3.70 2 2.60 1 1.50 1 1.70 1 1.40 1
 Z VOL. LOST 2.69 -4 5.46 -4 7.15 -2 7.15 -2 9.70 -2 1.05 -1 1.21 -1 1.21 -1 1.21 -1
 AVG. FLUX 1.02-14 8.68-16 1.76-16 1.05-16 1.05-16 1.05-16 1.14-16 1.20-16 1.25-16 1.31-16 1.36-16 1.36-16
 INS. FLUX 1.02-14 4.58-16 6.07-17 3.44-17 2.83-17 1.99-17 1.53-17 1.14-17 5.73-17 3.09-17 5.35-18 5.35-18

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 1.96-12 Mol./Area(2-6) = 1.14-11 Spec. S.A. = 4.00 1
 DELTA CONC. 5.20 1 HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS 56 DYS 70 DYS
 LAYERS LOST 3.27 -3 5.73 -3 6.50 -3 5.73 -3 -2.00 1 -2.80 1 -3.00 1 -3.40 1 -3.30 1 -3.10 1
 Z VOL. LOST 1.75 -4 3.07 -4 3.40 -4 3.40 -4 3.47 -4 2.39 -3 1.45 -4 1.18 -4 1.32 -3 1.35 -3
 AVG. FLUX 1.35-15 9.87-17 1.56-17 1.56-17 1.05-18 1.05-18 1.05-18 1.05-18 1.05-18 1.05-18 1.05-18 1.05-18
 INS. FLUX 1.35-15 4.41-17 1.80-18 1.80-18 1.55-18 1.55-18 -3.10-18 -4.34-18 -4.65-18 -5.27-18 -5.55-18 -2.40-18

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 6.63-11 Mol./Area(2-6) = 3.26-11 Spec. S.A. = 3.26 1
 DELTA CONC. 7.00 1* HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 LAYERS LOST 5.40 -3 1.47 -2 2.26 -2 2.26 -2 7.70 1 6.30 1 4.80 1 4.80 1 4.80 1
 Z VOL. LOST 2.36 -4 6.44 -4 9.88 -4 9.88 -4 3.34 -2 1.46 -3 1.62 -3 1.78 -3 1.94 -3
 AVG. FLUX 2.23-15 2.51-16 5.87-17 2.51-16 2.51-17 2.74-17 2.28-17 2.01-17 1.82-17
 INS. FLUX 2.23-15 1.68-16 2.26-17 1.46-17 1.19-17 9.12-18 9.12-18 9.12-18 9.12-18

pH = 7.9-8.0 MicroM Dis. Si = 364.0 Mol./Area(0-6) = 3.13-11 Mol./Area(2-6) = 1.64-11 Spec. S.A. = 4.00 1
 DELTA CONC. -4.00 1* HR 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 LAYERS LOST -2.51 -3 -6.70 1 -5.20 1 -5.60 1 -3.70 1 -2.90 1 -2.40 1 -2.90 1
 Z VOL. LOST -1.25 -4 -3.61 -4 -5.36 -4 -7.25 -4 -8.50 -4 -9.48 -4 -1.02 -3 -1.12 -3
 AVG. FLUX -1.06-15 -1.16-16 -2.46-17 -1.66-17 -1.30-17 -1.08-17 -9.45-18 -8.62-18
 INS. FLUX -1.06-15 -7.58-17 -9.40-18 -8.68-18 -5.73-18 -4.49-18 -3.72-18 -4.49-18

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MUSCOVITE

Den. = 2.80		Form.	Wt. = 398	# Si Atoms / Form. = 3	Spec. S. A. = 9.40	Total S. A. = 18.80	Mol. Vol. = 142.1	
L Thickness = 6.19 - 8		Vol./L = 1.16 - 2	Mol./L = 8.18 - 5	Mol. Si/L = 2.45 - 4	S.A./cc = 2.50	3 Part. Rad. = 1.13 - 5		
PH = 8.0-8.3	Micro Dis. Si = 5.9	Mol./Area(0-6) = 6.11-11	Mol./Area(2-6) = 4.37-11	Spec. S.A. = 8.40				
1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS 42 DYS	
DELTA CONC.	8.00	1.30	1.80	1.90	1.90	2.00	1.00 1	
LAYERS LOST	2.73	-3	7.17	-3	1.33	-2	2.63	-2
Z VOL. LOST	3.97	-5	1.06	-4	1.94	-4	2.88	-4
Avg. FLUX	9.92	-16	1.08	-16	2.87	-17	4.82	-4
INS. FLUX	9.92	-16	7.00	-17	1.55	-17	1.40	-17
							1.47	-17
PH = .6-7.8	Micro Dis. Si = 3.0	Mol./Area(0-6) = 8.88-11	Mol./Area(2-6) = 5.75-11	Spec. S.A. = 8.40				
1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS 42 DYS	
DELTA CONC.	1.50	1*	2.60	1	2.90	1	2.60	1
LAYERS LOST	5.12	-3	2.40	-2	3.00	1	2.41	-2
Z VOL. LOST	7.46	-5	2.03	-4	3.41	-2	4.41	-2
Avg. FLUX	1.86	-15	2.11	-16	5.16	-17	6.41	-16
INS. FLUX	1.86	-15	1.40	-16	2.49	-17	3.69	-17
							2.17	-17
PH = 7.8-8.0	Micro Dis. Si = 114.0	Mol./Area(0-6) = 2.01-10	Mol./Area(2-6) = 1.17-10	Spec. S.A. = 8.20				
1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS 42 DYS	
DELTA CONC.	-4.00	1*	-7.20	1	-7.00	1	-6.50	1
LAYERS LOST	-1.39	-2	-3.91	-2	-6.36	-2	-8.64	-2
Z VOL. LOST	-1.98	-4	-5.97	-4	-9.05	-4	-1.22	-3
Avg. FLUX	-5.08	-15	-5.92	-16	-1.37	-16	-1.77	-3
INS. FLUX	-5.08	-15	-3.97	-16	-6.17	-17	-7.68	-17
							-6.72	-17
PH = 7.6-7.8	Micro Dis. Si = 3.0	Mol./Area(0-6) = 7.46-11	Mol./Area(2-6) = 4.83-11	Spec. S.A. = 1.00 1				
1	HR *	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS 42 DYS	
DELTA CONC.	1.50	1*	2.60	1	2.90	1	2.60	1
LAYERS LOST	4.30	-3	1.17	-2	2.00	-2	3.70	-2
Z VOL. LOST	7.46	-5	2.03	-4	3.48	-4	6.41	-4
Avg. FLUX	1.56	-15	1.77	-16	4.34	-17	3.10	-17
INS. FLUX	1.56	-15	1.17	-16	2.09	-17	1.86	-17
							1.79	-17

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NEPHELINE

Den. = 2.60 Form. Wt. = 142 # Si Atoms / Form. = 1 Spec. S. A. = .61 Total S. A. = 1.22 Mol. Vol. = 54.6

L Thickness = 4.50 -8 Vol./L = 5.49 -4 Mol./L = 1.00 -5 Mol. Si/L = 1.00 -5 S.A./cc = 1.62 2 Part. Rad. = 1.89 -4

PH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 4.50-10 Mol./Area(2-6) = 3.58-10 Spec. S.A. = 4.50 -1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	2.00		2.00		7.00		9.00		8.00		8.00		8.00		8.00	
LAYERS LOST	2.02	-2	4.04	-2	1.11	-1	2.02	-1	2.03	-1	3.64	-1	4.44	-1	5.46	-1
Z VOL. LOST	1.06	-5	2.12	-5	5.85	-5	1.06	-4	1.49	-4	1.91	-4	2.34	-4	2.87	-4
Avg. FLUX	4.62	-15	3.85	-16	1.51	-16	1.37	-16	1.28	-16	1.24	-16	1.24	-16	1.24	-16
INS. FLUX	4.62	-15	2.01	-16	1.12	-16	1.24	-16	1.10	-16	1.10	-16	1.10	-16	1.10	-16

PH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 2.67-10 Mol./Area(2-6) = 2.19-10 Spec. S.A. = 7.70 -1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	2.00		2.00		6.00		1.00		8.00		9.00		9.00		9.00	
LAYERS LOST	1.18	-2	2.36	-2	5.90	-2	1.18	-1	1.65	-1	2.18	-1	2.18	-1	2.25	-1
Z VOL. LOST	1.06	-5	2.12	-5	5.32	-5	1.06	-4	1.49	-4	1.97	-4	2.44	-4	2.92	-4
Avg. FLUX	2.70	-15	2.25	-16	8.05	-17	8.05	-17	7.51	-17	7.44	-17	7.40	-17	7.38	-17
INS. FLUX	2.70	-15	1.17	-16	5.63	-17	8.05	-17	6.44	-17	7.24	-17	7.24	-17	7.24	-17

PH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = 2.17-10 Mol./Area(2-6) = 2.18-10 Spec. S.A. = 5.70 -1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	2.00		-6.00		-1.10		-6.00		-6.00		-4.00		-1.00		-1.00	
LAYERS LOST	1.59	-2	-3.19	-2	-1.19	-1	-1.67	-1	-2.15	-1	-2.47	-1	-2.55	-1	-2.63	-1
Z VOL. LOST	1.06	-5	-2.12	-5	-7.98	-5	-1.11	-4	-1.43	-4	-1.65	-4	-1.75	-4	-1.86	-4
Avg. FLUX	3.65	-15	-3.04	-16	-1.63	-16	-1.14	-16	-9.79	-17	-8.43	-17	-6.96	-17	-4.75	-17
INS. FLUX	3.65	-15	-4.76	-16	-1.39	-16	-6.52	-17	-6.52	-17	-4.35	-17	-1.08	-17	-1.08	-17

PH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -6.46-10 Mol./Area(2-6) = -3.04-10 Spec. S.A. = 6.90 -1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
LAYERS LOST	-7.91	-2	-2.30	-1	-4.15	-1	-5.40	-1	-6.52	-1	-7.05	-1	-7.45	-1	-7.84	-1
Z VOL. LOST	-6.39	-5	-1.86	-4	-3.35	-4	-4.36	-4	-5.27	-4	-5.69	-4	-6.01	-4	-6.33	-4
Avg. FLUX	-1.81	-14	-2.20	-15	-5.66	-16	-3.68	-16	-2.96	-16	-2.40	-16	-2.03	-16	-1.78	-16
INS. FLUX	-1.81	-14	-1.50	-15	-2.93	-16	-1.70	-16	-1.52	-16	-7.18	-17	-5.39	-17	-4.49	-17

PH = 7.6-7.9 MicroM Dis. Si = 105.4 Mol./Area(0-6) = -1.70-10 Mol./Area(2-6) = -7.72-11 Spec. S.A. = 6.80 -1

	1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	-5.00		-9.00		-3.00		-2.00		-1.00		-5.00		-1.00		-5.00	
LAYERS LOST	-3.34	-2	-9.36	-2	-1.13	-1	-2.27	-1	-1.33	-1	-1.67	-1	-1.73	-1	-2.07	-1
Z VOL. LOST	-2.66	-5	-7.45	-5	-9.05	-5	-1.01	-4	-1.06	-4	-1.33	-4	-1.38	-4	-1.65	-4
Avg. FLUX	-7.65	-15	-8.93	-16	-1.55	-16	-8.66	-17	-6.07	-17	-5.69	-17	-4.74	-17	-4.71	-17
INS. FLUX	-7.65	-15	-5.99	-16	-3.19	-17	-1.82	-17	-9.11	-18	-4.55	-17	-9.11	-18	-4.55	-17

OBSIDIAN

Den. = 2.62 Form. Wt. = 262 / Si Atoms / Form. = 3 Spec. S. A. = .98 Total S. A. = 1.96 Mol. Vol. = 100.0
 L Thickness = 5.50 -8 Vol./L = 1.07 -3 Mol./L = 1.07 -5 Mol. Si/L = 3.23 -5 S.A./cc = 2.61 2 Part. Rad. = 1.16 -4
 pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 2.34-10 Mol./Area(2-6) = 1.21-10 Spec. S.A. = 9.60 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	8.00	1.00	1.10	1.00	5.00	4.00	6.00	8.00
LAYERS LOST	1.89	-2	4.25	-2	6.85	-2	9.93	-2
Z VOL. LOST	2.61	-5	5.89	-5	9.49	-5	1.37	-4
Avg. FLUX	8.68	-15	8.13	-16	1.21	-4	1.50	-4
INS. FLUX	8.68	-15	6.71	-16	1.87	-16	9.04	-17
					5.16	-16	7.42	-17
					3.22	-17	2.58	-17
					3.87	-17	5.16	-17

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 1.55-10 Mol./Area(2-6) = 1.55-10 Spec. S.A. = 9.40 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	3.00	6.00	9.00	5.00	4.00	4.00	4.00	4.00
LAYERS LOST	7.24	-3	2.17	-2	4.34	-2	6.52	-2
Z VOL. LOST	9.82	-6	2.94	-5	5.89	-5	7.53	-5
Avg. FLUX	3.32	-15	4.15	-16	1.18	-16	1.84	-17
INS. FLUX	3.32	-15	2.89	-16	6.92	-17	5.93	-17
					3.29	-17	2.63	-17
					2.63	-17	2.63	-17
					3.17		3.17	

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 5.52-11 Mol./Area(2-6) = 3.15-11 Spec. S.A. = 9.50 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	1.00	0.00	5.00	2.00	2.00	1.00	2.00	2.00
LAYERS LOST	2.38	-3	2.38	-3	1.43	-2	2.38	-2
Z VOL. LOST	3.27	-6	3.27	-6	1.96	-5	3.27	-5
Avg. FLUX	1.09	-15	4.56	-17	3.91	-17	2.61	-17
INS. FLUX	1.09	-15	4.56	-17	3.80	-17	1.30	-17
					1.30	-17	6.52	-18
					1.30	-17	1.30	-17
					1.30	-17	3.26	-18

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 3.09-11 Mol./Area(2-6) = 0.00 Spec. S.A. = 9.70 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	1.00	1.00	6.00	2.00	-2.00	0.00	0.00	0.00
LAYERS LOST	2.34	-3	4.68	-3	1.87	-2	1.87	-2
Z VOL. LOST	3.27	-6	6.54	-6	2.61	-5	2.61	-5
Avg. FLUX	1.07	-15	8.94	-17	5.11	-17	1.70	-17
INS. FLUX	1.07	-15	4.66	-17	4.47	-17	1.27	-17
					-1.27	-17	0.00	0.00
					1.27	-17	0.00	0.00

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OLIGOCLASE

Den. = 2.62 Form. Wt. = 262 # Si Atoms / Form. = 3 Spec. S. A. = .73 Total S. A. = 1.46 Mol. Vol. = 100.0

L Thickness = 5.50 -8 Vol./L = 8.03 -4 Mol./L = 8.03 -6 Mol. Si/L = 2.41 -5 S.A./cc = 1.94 2 Part. Rad. = 1.56 -4

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 2.06-10 Mol./Area(2-6) = 1.68-10 Spec. S.A. = 4.90 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	0.00	1.00	4.00	4.00	4.00	3.00	5.00	6.00
LAYERS LOST	0.00	4.63 -3	2.31 -2	6.16 -2	6.02 -2	7.41 -2	9.72 -2	1.25 -1
Z VOL. LOST	0.00	3.27 -6	1.63 -5	2.94 -5	4.25 -5	5.24 -5	6.87 -5	8.84 -5
Avg. FLUX	0.00	8.85-17	6.32-17	5.69-17	5.48-17	5.06-17	5.31-17	5.69-17
INS. FLUX	0.00	9.24-17	5.90-17	5.06-17	3.79-17	6.32-17	7.59-17	

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 5.89-11 Mol./Area(2-6) = 4.82-11 Spec. S.A. = 7.00 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	0.00	0.00	2.00	1.00	2.00	2.00	2.00	2.00
LAYERS LOST	0.00	0.00	6.58 -3	9.72 -3	1.62 -2	2.27 -2	2.91 -2	3.56 -2
Z VOL. LOST	0.00	0.00	6.54 -6	9.82 -6	1.63 -5	2.29 -5	2.94 -5	3.60 -5
Avg. FLUX	0.00	0.00	1.77-17	1.32-17	1.47-17	1.55-17	1.59-17	1.62-17
INS. FLUX	0.00	0.00	2.06-17	8.85-18	1.77-17	1.77-17	1.77-17	1.77-17

pH = 8.3-8.5 MicroM Dis. Si = 55.0 Mol./Area(0-6) = 2.07-10 Mol./Area(2-6) = 8.07-11 Spec. S.A. = 6.50 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-4.00	-7.00	-1.10	-5.00	-5.00	-3.00	-1.00	0.00
LAYERS LOST	-1.39	-3.84 -2	-7.68 -2	-9.42 -2	-1.11 -1	-1.22 -1	-1.25 -1	-2.00
Z VOL. LOST	-1.30	-3.60 -5	-7.20 -5	-8.84 -5	-1.04 -4	-1.14 -4	-1.17 -4	-1.39 -4
Avg. FLUX	-6.41	-7.34 -16	-2.09 -16	-1.28 -16	-1.01 -16	-8.34 -17	-6.86 -17	-1.24 -4
INS. FLUX	-6.41-15	-4.87-16	-1.22-16	-4.76-17	-4.76-17	-2.86-17	-9.53-18	-1.30 -4

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 6.22-10 Mol./Area(2-6) = 2.73-10 Spec. S.A. = 8.50 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.20	-2.90	-2.80	-2.00	-1.50	-8.00	-9.00	-2.00
LAYERS LOST	-5.87	-1.36 -1	-2.10 -1	-2.64 -1	-3.04 -1	-3.25 -1	-3.49 -1	-1.30 -1
Z VOL. LOST	-7.20	-5.67 -4	-2.58 -4	-3.24 -4	-3.73 -4	-3.99 -4	-4.29 -4	-4.51 -1
Avg. FLUX	-2.69	-1.14	-2.60 -16	-3.76 -16	-2.07 -16	-2.22 -16	-1.91 -16	-5.53 -4
INS. FLUX	-2.69-14	-1.54-15	-2.38-16	-1.45-16	-1.09-16	-5.83-17	-6.56-17	-1.40-16

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 2.27-10 Mol./Area(2-6) = 9.22-11 Spec. S.A. = 6.10 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-6.00	-9.00	-7.00	-4.00	-2.00	-3.00	-3.00	-3.00
LAYERS LOST	-2.23	-5.58 -2	-8.18 -2	-9.67 -2	-1.15 -1	-1.26 -1	-1.37 -1	
Z VOL. LOST	-1.96	-4.91 -5	-7.20 -5	-8.51 -5	-9.16 -5	-1.01 -4	-1.11 -4	-1.21 -4
Avg. FLUX	-1.02	-1.06 -15	-2.23 -16	-1.32 -16	-9.48 -17	-7.87 -17	-6.91 -17	-6.26 -17
INS. FLUX	-1.02-14	-6.68-16	-8.30-17	-4.06-17	-2.03-17	-3.04-17	-3.04-17	-3.04-17

OLIVINE

Dens. = 3.22 Form. Wt. = 140 # Si Atoms / Form. = 1 Spec. S. A. = .43 Total S. A. = .86 Mol. Vol. = 43.4
L Thickness = 4.17 -8 Vol./L = 3.58 -4 Mol./L = 8.25 -6 Mol. Si/L = 8.25 -6 S.A./cc = 1.14 2 Part. Rad. = 2.16 -4

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 3.82 -9 Mol./Area(2-6) = 1.34 -9 Spec. S.A. = 3.80 -1

1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
3.40	1*	1.30	2	8.80	1	4.10	1	2.20
3.49	-1	1.68	2	2.59	1	3.29	1	2.60
1.78	-4	8.60	4	1.52	3	3.49	3	3.99
9.32	-14	1.87	14	4.11	15	1.67	3	1.90
9.32	-14	1.54	14	1.67	15	1.74	15	1.18
9.32	-14	1.54	14	6.68	16	4.40	16	4.05
						3.26	16	3.58
							16	4.24

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 1.80 -9 Mol./Area(2-6) = 4.19-10 Spec. S.A. = 1.10

1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
5.00	1*	2.22	2	1.35	2	4.80	1	2.10
1.77	-1	9.66	-1	1.44	1	1.61	1	1.79
2.62	-4	1.42	-3	2.13	-3	2.38	-3	2.64
4.73	-14	1.07	-14	2.29	-15	1.28	-15	2.72
4.73	-14	9.14	-15	8.87	-16	2.70	-16	3
						1.57	-16	1.18
						16	16	16

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 9.82-10 Mol./Area(2-6) = 3.09-10 Spec. S.A. = 1.60

1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
3.70	1	1.40	2	1.10	2	5.10	1	2.00
9.03	-2	4.32	1	7.01	-1	8.25	-1	9.18
1.94	-4	9.29	-4	1.50	-3	1.77	-3	1.87
2.40	-14	4.80	-15	1.11	-15	6.54	-16	4.62
2.40	-14	3.96	-15	4.97	-16	1.97	-16	3
						7.75	-17	7.75
						17	17	17

84	DYS	98 DYS	112 DYS					
1.20	1	1.40	1	1.30	1			
1.18	1	1.21	1	1.25	1			
2.54	-3	2.61	-3	2.68	-3			
1.56	-16	1.38	-16	1.24	-16			
2.32	-17	2.71	-17	2.51	-17			

pH = 7.6-7.9 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 1.70 -9 Mol./Area(2-6) = 2.43-10 Spec. S.A. = 1.03

1	HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
5.00	1*	2.23	2	1.29	2	3.00	1	1.00
1.89	-1	1.03	1	1.52	1	1.63	1	1.74
2.62	-4	1.43	-3	2.11	-3	2.26	-3	2.35
5.05	-14	1.15	-14	2.41	-15	1.30	-15	3
5.05	-14	9.80	-15	9.05	-16	1.80	-16	1.02
						16	16	16
						16	16	16

OLIVINE (CONT.)

pH = 8.1-8.5 MicroM Dis. Si = 205.0 Mol./Area(0-6) = 4.90-10 Mol./Area(2-6) = 1.47-10 Spec. S.A. = 1.17

DELTA CONC.	4.00	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	56 DYS	70 DYS	
LAYERS LOST	1.33 -2	4.50	1	5.80	1	2.60	1	4.00	1	2.00	1	2.00
Z VOL. LOST	2.09 -5	1.63	-1	3.57	-1	4.46	-1	4.81	-1	5.04	-1	5.57
AVG. FLUX	3.56 -15	1.81	-15	5.61	-4	6.98	-4	7.56	-4	7.92	-4	8.76
INS. FLUX	3.56 -15	1.74	-15	5.67	-16	5.52	-16	5.54	-16	1.60	-16	8.85
				3.58	-16	1.37	-16	5.82	-17	2.11	-17	5.29
								1.58	-17	1.05	-17	

pH = 8.3-8.5 MicroM Dis. Si = 468.0 Mol./Area(0-6) = 6.76-10 Mol./Area(2-6) = 4.29-10 Spec. S.A. = 1.17

DELTA CONC.	-2.40	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	56 DYS	56 DYS	
LAYERS LOST	-8.01 -2	-2.30	-1	-3.00	-1	-1.60	-1	-2.50	-1	-3.00	-1	-4.20
Z VOL. LOST	-2.26 -4	-1.57	-1	-2.57	-1	-3.10	-1	-3.94	-1	-4.77	-1	-7.04
AVG. FLUX	-2.13 -14	-2.46	-4	-4.04	-4	-4.88	-4	-6.19	-4	-7.50	-4	-8.45
INS. FLUX	-2.13 -14	-1.74	-15	-4.08	-16	-4.46	-16	-2.08	-16	-9.08	-4	-1.32
				-8.90	-16	-1.85	-16	-8.47	-17	-1.32	-16	-1.86
								-1.58	-16	-1.58	-16	-1.67
									-2.01	-16		-1.11
												-16

pH = 7.8-8.0 MicroM Dis. Si = 781.0 Mol./Area(0-6) = 1.15-10 Mol./Area(2-6) = 3.52-11 Spec. S.A. = 1.17

DELTA CONC.	-6.00	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS	56 DYS	56 DYS	
LAYERS LOST	-2.00 -2	-4.67	-2	-8.00	-2	-1.10	-1	0.00	-1.00	-4.00	-1	-5.00
Z VOL. LOST	-2.14 -5	-7.35	-5	-1.31	-4	-8.35	-2	-8.68	-2	-9.01	-2	-1.20
AVG. FLUX	-5.34 -15	-5.19	-16	-1.32	-16	-1.31	-4	-1.31	-4	-1.41	-4	-1.88
INS. FLUX	-5.34 -15	-5.09	-16	-6.80	-17	0.00	-6.62	-17	-4.59	-17	-3.57	-17
								-5.29	-18	-5.29	-18	-2.11
									-2.11	-17		-2.64
												-17

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ORTHOCLASE

Den. = 2.56	Fom.	Wt. = 278	# Si Atoms / Form. = 3	Spec. S. A. = .90	Total S. A. = 1.80	Mol. Vol. = 108.5
L Thickness = 5.65 - 8	Vol./L = 1.01 - 3	Mol./L = 9.38 - 6	Mol. Si/L = 2.81 - 5	S.A./cc = 2.40	2 Part.	Rad. = 1.30 - 4
pH = 8.3-8.5	MicroM Dis. Si = 1.8	Mol./Area(0-6) = 1.95-12	Mol./Area(2-6) = 1.45-12	Spec. S.A. = 6.70	1	
DELTA CONC.	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS
LAYERS LOST	1.00	2.00	6.00	6.00	5.00	5.00
Z VOL. LOST	3.57	-5	1.07	-4	5.26	-4
Avg. FLUX	3.47	-6	1.06	-5	5.21	-5
INS. FLUX	1.55-17	1.55-17	1.96-18	8.32-19	6.94-19	6.16-19
					5.55-19	5.32-19
					4.62-19	5.18-19
					2.77-19	6.62-19
						5.39-19
						6.47-19

pH = 7.6-7.9	MicroM Dis. Si = 3.9	Mol./Area(0-6) = 5.11-13	Mol./Area(2-6) = 4.26-13	Spec. S.A. = 8.80	1	
DELTA CONC.	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS
LAYERS LOST	0.00	0.00	2.00	2.00	2.00	2.00
Z VOL. LOST	0.00	0.00	5.45	-5	1.09	-4
Avg. FLUX	0.00	0.00	6.95	-6	1.38	-5
INS. FLUX	0.00	0.00	1.40	-19	1.40	-19
					1.64-19	1.40-19
						1.40-19

pH = 8.3-8.5	MicroM Dis. Si = 55.0	Mol./Area(0-6) = 4.74-13	Mol./Area(2-6) = 1.42-13	Spec. S.A. = 7.90	1	
DELTA CONC.	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS
LAYERS LOST	-2.00	-2.00	-3.00	-3.00	0.00	0.00
Z VOL. LOST	-6.07	-5	-1.21	-4	-2.12	-4
Avg. FLUX	-6.95	-6	-1.39	-5	-3.47	-5
INS. FLUX	-2.63	-17	-2.19	-18	-5.49	-19
	-2.63	-17	-1.14	-18	-2.74	-19
					-2.35	-19
					0.00	0.00

pH = 8.3-8.5	MicroM Dis. Si = 105.4	Mol./Area(0-6) = 2.43-12	Mol./Area(2-6) = 1.35-12	Spec. S.A. = 9.10	1	
DELTA CONC.	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS
LAYERS LOST	-4.00	-1.20	1	-1.00	-8.00	-5.00
Z VOL. LOST	-1.05	-4	-4.21	-5	-6.85	-4
Avg. FLUX	-1.38	-5	-5.56	-5	-9.03	-3
INS. FLUX	-4.57	-17	-7.63	-18	-1.15	-18
	-4.57	-17	-5.97	-18	-7.94	-19
					-5.45	-19
					-7.49	-19
					-3.40	-19
					0.00	0.00

pH = 7.6-7.9	MicroM Dis. Si = 105.4	Mol./Area(0-6) = 1.20-12	Mol./Area(2-6) = 4.91-13	Spec. S.A. = 8.40	1	
DELTA CONC.	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS
LAYERS LOST	-4.00	-7.00	-5.00	0.00	-3.00	-5.00
Z VOL. LOST	-1.14	-4	-3.14	-4	-4.56	-4
Avg. FLUX	-1.38	-5	-3.82	-5	-5.56	-5
INS. FLUX	-4.96	-17	-5.68	-18	-1.18	-18
	-4.96	-17	-3.77	-18	-4.30	-19
					-0.30	-19
					-2.21	-19
					0.00	0.00

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QUARTZ

Den. = 2.65 Form. Wt. = 60 # Si Atoms / Form. = 1 Spec. S. A. = .86 Total S. A. = 1.72 Mol. Vol. = 22.6
L. Thickness = 3.35 -8 Vol./L = 5.77 -4 Mol./L = 2.54 -5 Mol. Si/L = 2.54 -5 S.A./cc = 2.29 2 Part. Rad. = 1.31 -4

pH = 8.3-8.5 MicroM Dis. Si = 1.8 Mol./Area(0-6) = 4.72 -9 Mol./Area(2-6) = 3.10 -9 Spec. S.A. = 7.00 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.60 1	1.17 2	1.59 2	1.40 2	1.09 2	1.02 2	1.10 2	1.19 2
LAYERS LOST	9.39 -2	5.16 -1	1.09	1.59	1.99	2.35	2.75	3.18
Z VOL. LOST	5.84 -5	3.21 -4	6.79 -4	9.94 -4	1.23 -3	1.46 -3	1.71 -3	1.98 -3
Avg. FLUX	3.86 -14	8.86 -15	2.67 -15	1.95 -15	1.62 -15	1.44 -15	1.35 -15	1.30 -15
INS. FLUX	3.86 -14	7.56 -15	1.64 -15	1.24 -15	9.65 -16	9.03 -16	9.74 -16	1.05 -15

pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 4.06 -9 Mol./Area(2-6) = 2.16 -9 Spec. S.A. = 6.90 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.50 1*	1.13 2	2.11 2	1.33 2	7.80 1	7.00 1	6.30 1	5.50 1c
LAYERS LOST	9.16 -2	5.05 -1	5.27	1.76	2.05	2.30	2.54	2.74
Z VOL. LOST	5.62 -5	3.10 -4	7.85 -4	1.08 -3	1.25 -3	1.41 -3	1.55 -3	1.68 -3
Avg. FLUX	3.77 -14	8.66 -15	3.13 -15	2.16 -15	1.67 -15	1.41 -15	1.24 -15	1.12 -15
INS. FLUX	3.77 -14	7.41 -15	2.21 -15	1.19 -15	7.00 -16	6.29 -16	5.66 -16	4.94 -16

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 6.19 -9 Mol./Area(2-6) = 3.51 -9 Spec. S.A. = 6.10 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	3.50 1	2.02 2	1.99 2	1.58 2	1.07 2	9.70 1	1.00 2	5.6 DYS
LAYERS LOST	1.45 -1	9.82 -1	1.80	2.46	2.90	3.30	3.72	4.17 2
Z VOL. LOST	7.87 -5	5.33 -4	9.80 -4	1.33 -3	1.57 -3	2.79 -3	2.02 -3	4.66 4.96
Avg. FLUX	5.97 -14	1.68 -14	4.43 -15	3.01 -15	2.37 -15	2.02 -15	1.82 -15	2.53 -3
INS. FLUX	5.97 -14	1.41 -14	2.35 -15	1.60 -15	1.08 -15	9.85 -16	1.01 -15	1.43 -15

	84 DYS	98 DYS	112 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.20 1	3.80 1	2.40 1	1.99 2	1.67 2	8.60 1	4.40 1	4.40 1
LAYERS LOST	5.13	5.29	5.39	1.08	1.37	1.65	1.80	2.09
Z VOL. LOST	2.78 -3	2.87 -3	2.92 -3	2.92 -3	2.92 -3	1.13 -3	1.22 -3	1.43 -3
Avg. FLUX	1.04 -15	9.22 -16	8.25 -16	1.91 -16	1.21 -16	1.35 -15	1.10 -15	1.21 -15
INS. FLUX	2.13 -16	1.91 -16	1.21 -16			3.54 -16	3.70 -16	3.54 -16

pH = 7.6-7.9 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 3.10 -9 Mol./Area(2-6) = 1.49 -9 Spec. S.A. = 7.70 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	4.00 1	1.24 2	1.67 2	8.60 1	8.70 1	4.40 1	4.60 1	4.40 1
LAYERS LOST	1.31 -1	5.38 -1	1.08	1.37	1.65	1.80	1.95	2.09
Z VOL. LOST	8.99 -5	3.68 -4	7.44 -4	9.38 -4	1.13 -3	1.22 -3	1.33 -3	1.43 -3
Avg. FLUX	5.41 -14	9.22 -15	2.66 -15	1.67 -15	1.35 -15	1.10 -15	9.56 -16	8.56 -16
INS. FLUX	5.41 -14	7.29 -15	1.56 -15	6.92 -16	7.00 -16	3.54 -16	3.70 -16	3.54 -16

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QUARTZ (CONT.)

pH = 8.3-8.5 MICRON DIS. SI = 205.0 Mol./Area(0-6) = 5.29 -9 Mol./Area(2-6) = 3.34 -9 Spec. S.A. = 7.50 -1

1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	42	DYS	56	DYS	70	DYS	
2.50	-1	1.20	2	2.45	2	2.00	2	1.33	2	1.01	2	1.25	2	1.09	2	9.00	1	
DELTA CONC.																		
6.43	-2	4.89	-1	1.31		1.99		2.43		2.77		3.15		3.57		3.93	4.24	
LAYERS LOST																		
Z VOL. LOST	5.62	-5	3.26	-4	8.77	-4	1.32	-3	1.62	-3	1.85	-3	2.10	-3	2.38	-3	2.83	-3
Avg. FLUX	3.47	-14	8.39	-15	2.22	-15	2.43	-15	1.99	-15	1.70	-15	1.54	-15	1.45	-15	1.04	-15
INS. FLUX	3.47	-14	7.24	-15	2.36	-15	1.65	-15	1.09	-15	8.34	-16	9.09	-16	4.50	-16	3.72	-16

pH = 8.3-8.5 MICRON DIS. SI = 468.0 Mol./Area(0-6) = 4.62 -9 Mol./Area(2-6) = 3.34 -9 Spec. S.A. = 7.50 -1

1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	42	DYS	56	DYS	70	DYS	
1.50	1	4.00	1	1.99	2	1.74	2	1.44	2	1.10	2	1.15	2	1.27	2	1.80	1	
DELTA CONC.																		
5.05	-2	1.85	-1	8.56	-1	1.44		1.92		2.30		2.68		3.11		3.37		
LAYERS LOST	3.37	-5	1.23	-4	5.71	-4	9.62	-4	1.28	-3	1.53	-3	1.79	-3	2.07	-3	2.25	-3
Z VOL. LOST																		
Avg. FLUX	2.08	-14	3.18	-15	2.09	-15	1.76	-15	1.57	-15	1.40	-15	1.31	-15	1.27	-15	1.03	-15
INS. FLUX	2.08	-14	2.41	-15	1.91	-15	1.43	-15	1.19	-15	9.09	-16	9.50	-16	1.04	-15	3.22	-16

pH = 7.8-8.0 MICRON DIS. SI = 781.0 Mol./Area(0-6) = 3.99-11 Mol./Area(2-6) = 1.65-10 Spec. S.A. = 7.50 -1

1	HR	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	42	DYS	56	DYS	70	DYS	
-1.00	1*	-1.40	1	-1.70	1	1.00		1.00		2.40		1.70		-6.00				
DELTA CONC.																		
-3.37	-2	-8.09	-2	-1.38	-1	-1.34	-1	-1.31	-1	-5.05	-2	-6.74	-3	-2.69	-2			
LAYERS LOST																		
Z VOL. LOST	-2.24	-5	-5.39	-5	-9.22	-5	-8.99	-5	-8.77	-5	-3.37	-5	-4.49	-6	-1.79	-5		
Avg. FLUX	-1.38	-14	-1.38	-15	-1.38	-16	-1.65	-16	-1.07	-16	-3.10	-17	-3.30	-18	-1.10	-17		
INS. FLUX	-1.38	-14	-8.45	-16	-1.63	-16	8.26	-18	8.26	-18	1.98	-16	1.07	-16	-4.96	-17		

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QUARTZ (1HF)

Dens. = 2.65 Form. Wt. = 60 # Si Atoms / Form. = 1 Spec. S. A. = .29 Total S. A. = .58 Mol. Vol. = 22.6
L Thickness = 3.35 -8 Vol./L = 1.94 #4 Mol./L = 8.59 -6 Mol. Si/L = 8.59 -6 S.A./cc = 7.73 1 Part. Rad. = 3.90 -4
pH = 7.6-7.8 Micro Dis. Si = 3.0 Mol./Area(0-6) = 5.56-10 Mol./Area(2-6) = 4.26-10 Spec. S.A. = 2.90 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	4.00	4.00	7.00	6.00	7.00	6.00	7.00
LAYERS LOST	1.74 -2	5.23 -2	8.72 -2	1.48 -1	2.00 -1	2.61 -1	3.14 -1	3.75 -1
% VOL. LOST	4.49 -6	1.34 -5	2.24 -5	2.82 -5	5.17 -5	6.74 -5	8.09 -5	9.67 -5
Avg. FLUX	7.18-15	8.97-16	2.13-16	1.81-16	1.63-16	1.60-16	1.53-16	1.53-16
INS. FLUX	7.18-15	6.24-16	9.97-17	1.49-16	1.28-16	1.49-16	1.28-16	1.49-16

pH = 7.7-7.9 Micro Dis. Si = 109.8 Mol./Area(0-6) = 5.08-10 Mol./Area(2-6) = 3.02-10 Spec. S.A. = 3.10 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-4.00	-6.00	-7.00	-7.00	-5.00	-5.00	-4.00	-4.00
LAYERS LOST	-3.26 -2	-8.16 -2	-1.38 -1	-1.95 -1	-2.36 -1	-2.77 -1	-3.10 -1	-3.42 -1
% VOL. LOST	-8.99 -6	-2.24 -5	-3.82 -5	-5.39 -5	-6.52 -5	-7.64 -5	-8.54 -5	-9.44 -5
Avg. FLUX	-1.34-14	-1.40-15	-3.40-16	-2.40-16	-1.93-16	-1.70-16	-1.52-16	-1.40-16
INS. FLUX	-1.34-14	-8.76-16	-1.63-16	-1.40-16	-1.00-16	-1.00-16	-8.00-17	-8.00-17

QUARTZ (1 MF TREATED)

Den. = 2.65 Form. Wt. = 60 f Si Atoms / Form. = 1 Spec. S. A. = .86 Total S. A. = 1.72 Mol. Vol. = 22.6
 L Thickness = 3.35 -8 Vol./L = 5.77 -4 Mol./L = 2.54 -5 Mol. Si/L = 2.54 -5 S.A./cc = 2.29 2 Part. Rad. = 1.31 -4
 pH = 7.6-7.8 MicroH Dis. Si = 3.0 Mol./Area(0-6) = 5.49-10 Mol./Area(2-6) = 4.12-10 Spec. S.A. = 3.00 -1
 1 HR * 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 DELTA CONC. 3.00 4.00 4.00 7.00 6.00 7.00 6.00 7.00
 LAYERS LOST 2.52 -2 5.90 -2 9.27 -2 1.51 -1 2.02 -1 2.61 -1 3.12 -1 3.71 -1
 Z VOL. LOST 6.74 -6 1.57 -5 2.47 -5 4.04 -5 5.39 -5 6.97 -5 8.32 -5 9.89 -5
 AVG. FLUX 1.04-14 1.01-15 2.27-16 1.86-16 1.65-16 1.60-16 1.52-16 1.51-16
 INS. FLUX 1.04-14 6.03-16 9.64-17 1.44-16 1.24-16 1.44-16 1.24-16 1.44-16

pH = 7.7-7.9 MicroH Dis. Si = 109.8 Mol./Area(0-6) = 5.25-10 Mol./Area(2-6) = 3.12-10 Spec. S.A. = 3.00 -1
 1 HR * 1 DYS 7 DYS 14 DYS 21 DYS 28 DYS 35 DYS 42 DYS
 DELTA CONC. -4.00 -6.00 -7.00 -7.00 -5.00 -5.00 -4.00 -4.00
 LAYERS LOST -3.37 -2 -8.43 -2 -1.43 -1 -2.02 -1 -2.44 -1 -3.20 -1 -3.54 -1
 Z VOL. LOST -8.99 -6 -2.24 -5 -3.82 -5 -5.39 -5 -6.52 -5 -7.64 -5 -8.54 -5 -9.44 -5
 AVG. FLUX -1.38-14 -1.46-15 -3.51-16 -2.48-16 -1.99-16 -1.75-16 -1.57-16 -1.44-16
 INS. FLUX -1.38-14 -9.05-16 -1.68-16 -1.44-16 -1.03-16 -1.03-16 -8.26-17 -8.26-17

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QUARTZ (2HF)

Den. = 2.65 Form. Wt. = 60 # Si Atoms / Form. = 1 Spec. S. A. = .29 Total S. A. = .58 Mol. Vol. = 22.6
 L Thickness = 3.35 - 8 Vol./L = 1.94 - 4 Mol./L = 8.59 - 6 Mol. Si/L = 8.59 - 6 S.A./cc = 7.73 1 Part. Rad. = 1.90 - 4

pH = 7.6-7.8 MicroM Dis. Si = 3.1 Mol./Area(0-6) = 7.77-10 Mol./Area(2-6) = 4.44-10 Spec. S.A. = 2.70 - 1

	1	HR*	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	6.00		6.00		1.20	1	9.00		7.00		7.00		5.00		4.00	
LAYERS LOST	5.62	-2	1.12	-1	2.24	-1	3.09	-1	3.74	-1	4.40	-1	4.87	-1	5.24	-1
Z VOL. LOST	1.34	-5	2.69	-5	5.39	-5	7.42	-5	8.99	-5	1.05	-4	1.16	-4	1.25	-4
Avg. FLUX	2.31	-14	1.92	-15	5.51	-16	3.78	-16	3.06	-16	2.69	-16	2.38	-16	2.14	-16
INS. FLUX	2.31	-14	1.00	-15	3.21	-16	2.06	-16	1.60	-16	1.60	-16	1.14	-16	9.18	-17

pH = 7.7-7.7 MicroM Dis. Si = 53.5 Mol./Area(0-6) = 1.29-10 Mol./Area(2-6) = 1.29-10 Spec. S.A. = 2.90 - 1

	1	HR*	0	00	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	0.00		0.00		0.00		3.00		2.00		3.00		1.00		1.00		1.00	
LAYERS LOST	0.00		0.00		0.00		2.61	-2	4.36	-2	6.97	-2	7.85	-2	8.72	-2	8.72	-2
Z VOL. LOST	0.00		0.00		0.00		6.74	-6	1.12	-5	1.79	-5	2.02	-5	2.24	-5	2.24	-5
Avg. FLUX	0.00		0.00		0.00		3.20	-17	2.56	-17	4.27	-17	3.84	-17	3.56	-17	3.56	-17
INS. FLUX	0.00		0.00		0.00		6.41	-17	4.27	-17	6.41	-17	2.13	-17	2.13	-17	2.13	-17

pH = 7.7-7.9 MicroM Dis. Si = 109.8 Mol./Area(0-6) = -6.83-10 Mol./Area(2-6) = -3.34-10 Spec. S.A. = 2.80 - 1

	1	HR*	-7	00	1	DYS	7	DYS	14	DYS	21	DYS	28	DYS	35	DYS	42	DYS
DELTA CONC.	-7.00		-7.00		-1	20	1	-6.00	-5.00	-5.00	-5.00	-6.00		-3.00		-3.00		
LAYERS LOST	-6.32	-2	-1.26	-1	-2.34	-1	-2.89	-1	-3.34	-1	-3.79	-1	-4.33	-1	-4.60	-1	-4.60	-1
Z VOL. LOST	-1.57	-5	-3.14	-5	-5.84	-5	-7.19	-5	-8.32	-5	-9.44	-5	-1.07	-4	-1.14	-4	-1.14	-4
Avg. FLUX	-2.60	-14	-2.17	-15	-5.75	-16	-3.54	-16	-2.73	-16	-2.32	-16	-2.12	-16	-1.88	-16	-1.88	-16
INS. FLUX	-2.60	-14	-1.13	-15	-3.10	-16	-1.32	-16	-1.10	-16	-1.10	-16	-1.32	-16	-6.64	-17	-6.64	-17

QUARTZ (2NF TREATED)

Den. = 2.65 Form. Wt. = 60 # Si Atoms / Form. = 1 Spec. S. A. = .86 Total S. A. = 1.72 Mol. Vol. = 22.6
L Thickness = 3.35 -8 Vol./L = 5.77 -4 Mol./L = 2.54 -5 Mol. Si/L = 2.54 -5 S.A./cc = 2.29 2 Part. Rad. = 1.31 -4
PH = 7.6-7.8 MicroM Dis. Si = 3.1 Mol./Area(0-6) = 7.77-10 Mol./Area(2-6) = 4.44-10 Spec. S.A. = 2.70 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	6.00	6.00	1.20	1.00	7.00	7.00	5.00	4.00
LAYERS LOST	5.62 -2	1.12 -1	2.24 -1	1.09 -1	3.74 -1	4.40 -1	4.87 -1	5.24 -1
Z VOL. LOST	1.34 -5	2.69 -5	5.39 -5	7.42 -5	8.99 -5	1.05 -4	1.16 -4	1.25 -4
AVG. FLUX	2.31 -14	1.92 -15	5.51 -16	3.78 -16	3.06 -16	2.69 -16	2.38 -16	2.14 -16
INS. FLUX	2.31 -14	1.00 -15	3.21 -16	2.06 -16	1.60 -16	1.60 -16	1.14 -16	9.18 -17

PH = 7.7-7.7 MicroM Dis. Si = 53.5 Mol./Area(0-6) = 1.38-10 Mol./Area(2-6) = 1.38-10 Spec. S.A. = 2.70 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	0.00	0.00	0.00	3.00	2.00	1.00	1.00	1.00
LAYERS LOST	0.00	0.00	0.00	2.81 -2	4.68 -2	7.49 -2	8.43 -2	9.36 -2
Z VOL. LOST	0.00	0.00	0.00	6.74 -6	1.12 -5	1.79 -5	2.02 -5	2.24 -5
AVG. FLUX	0.00	0.00	0.00	3.44 -17	3.82 -17	4.59 -17	4.13 -17	3.82 -17
INS. FLUX	0.00	0.00	0.00	6.88 -17	6.59 -17	6.88 -17	2.29 -17	2.29 -17

PH = 7.7-7.9 MicroM Dis. Si = 109.8 Mol./Area(0-6) = 6.80-10 Mol./Area(2-6) = 3.47-10 Spec. S.A. = 2.70 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-6.00	-6.00	-1.20	1 -6.00	-5.00	-5.00	-6.00	-7.00
LAYERS LOST	-5.62 -2	-1.12 -1	-2.24 -1	-2.81 -1	-3.27 -1	-3.74 -1	-4.31 -1	-4.59 -1
Z VOL. LOST	-1.34 -5	-2.69 -5	-5.39 -5	-6.74 -5	-7.87 -5	-8.99 -5	-1.03 -4	-1.10 -4
AVG. FLUX	-2.31 -14	-1.92 -15	-5.51 -16	-3.78 -16	-2.67 -16	-2.38 -16	-2.11 -16	-1.87 -16
INS. FLUX	-2.31 -14	-1.00 -15	-3.21 -16	-1.37 -16	-1.14 -16	-1.14 -16	-1.37 -16	-6.88 -17

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RETICULITE

Den. = 3.90 Form. Wt. = 116 # Si Atoms / Form. = 1 Spec. S. A. = .63 Total S. A. = 1.26 Mol. Vol. = 29.7
 L Thickness = 3.67 - 8 Vol./L = 4.63 - 4 Mol./L = 1.55 - 5 Mol. Si/L = 1.55 - 5 S.A./cc = 1.68 2 Part. Rad. = 1.22 - 4
 pH = 7.6-7.9 MicroM Dis. Si = 3.9 Mol./Area(0-6) = 2.97-10 Mol./Area(2-6) = 1.90-10 Spec. S.A. = 6.30 - 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	3.00	5.00	1.00	1.00	1.00	4.00	6.00	5.00
LAYERS LOST	1.44 - 2	3.85 - 2	8.66 - 2	1.34 - 1	1.68 - 1	1.87 - 1	2.16 - 1	2.40 - 1
Z VOL. LOST	1.30 - 5	3.47 - 5	7.82 - 5	1.21 - 4	1.52 - 4	1.69 - 4	1.95 - 4	2.17 - 4
AVG. FLUX	4.96-15	5.51-16	1.77-16	1.37-16	1.14-16	9.59-17	8.85-17	8.20-17
INS. FLUX	4.96-15	5.59-16	1.14-16	9.84-17	6.88-17	3.93-17	5.90-17	4.92-17

pH = 8.3-8.5 MicroM Dis. Si = 105.4 Mol./Area(0-6) = 1.78-11 Mol./Area(2-6) = 4.76-11 Spec. S.A. = 6.30 - 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	-4.00	-3.00	3.00	2.00	0.00	0.00	3.00
LAYERS LOST	9.63 - 3	-9.63 - 3	-2.40 - 2	-9.63 - 3	0.00	0.00	0.00	1.00
Z VOL. LOST	8.69 - 6	-8.69 - 6	-2.17 - 5	-8.69 - 6	0.00	0.00	0.00	1.92 - 2
AVG. FLUX	3.30-15	-1.37-16	-4.92-17	-9.84-18	0.00	0.00	0.00	1.73 - 5
INS. FLUX	3.30-15	-2.87-16	-3.44-17	2.95-17	1.96-17	0.00	0.00	4.92-18

pH = 7.6-7.9 MicroM Dis. Si = 101.7 Mol./Area(0-6) = 1.19-11 Mol./Area(2-6) = 1.19-11 Spec. S.A. = 6.30 - 1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-2.00	4.00	2.00	-2.00	0.00	0.00	0.00	0.00
LAYERS LOST	-9.63 - 3	9.63 - 3	1.92 - 2	9.63 - 3	9.63 - 3	9.63 - 3	9.63 - 3	9.63 - 3
Z VOL. LOST	-8.69 - 6	8.69 - 6	1.73 - 5	8.69 - 6	8.69 - 6	8.69 - 6	8.69 - 6	8.69 - 6
AVG. FLUX	-3.30-15	1.37-16	3.93-17	9.84-18	6.56-18	4.92-18	3.93-18	3.28-18
INS. FLUX	-3.30-15	2.87-16	2.29-17	-1.96-17	0.00	0.00	0.00	0.00

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SERPENTINE

Den. = 2.50 Pore. Wt. = 552 # Si Atoms / Form. = 4 Spec. S. A. = .70 Total S. A. = 1.40 Mol. Vol. = 220.8
 L Thickness = 7.16 -8 Vol./L = 1.00 -3 Mol./L = 4.54 -6 Mol. Si/L = 1.81 -5 S.A./cc = 1.86 2 Part. Rad. = 1.71 -4
 pH = 8.3-8.5 Micro Dis. Si = 1.8 Mol./Area(0-6) = 5.90-10 Mol./Area(2-6) = 4.21-10 Spec. S.A. = 7.30 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	1.00	2.10	1.80	1.50	1.50	1.60	1.80
LAYERS LOST	7.90	4.76	1.30	2.01	2.61	3.20	3.83	4.54
χ VOL. LOST	1.03	-5	6.21	-4	2.63	-4	4.19	-4
Avg. FLUX	2.85	-15	7.13	-16	2.80	-16	1.86	-16
INS. FLUX	2.85	-15	6.20	-16	2.08	-16	1.52	-16
					1.52	-16	1.35	-16

pH = 7.6-7.9 Micro Dis. Si = 3.9 Mol./Area(0-6) = 3.67-10 Mol./Area(2-6) = 2.01-10 Spec. S.A. = 9.70 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	1.00	1.80	1.50	1.40	1.20	1.00	8.00	8.00
LAYERS LOST	2.97	-2	8.33	-2	1.69	-1	2.35	-1
χ VOL. LOST	5.17	-5	1.46	-4	2.22	-4	3.57	-4
Avg. FLUX	1.07	-14	1.25	-15	2.74	-16	1.47	-16
INS. FLUX	1.07	-14	8.40	-16	1.11	-16	8.94	-17
					7.67	-17	6.39	-17

pH = 8.3-8.5 Micro Dis. Si = 105.4 Mol./Area(0-6) = -1.24-11 Mol./Area(2-6) = -4.16-12 Spec. S.A. = 9.00 -1

	1 HR	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-4.00	-1.00	3.00	-1.00	2.00	-4.00	4.00	4.00
LAYERS LOST	-1.28	-2	-1.60	-2	-6.61	-3	-3.20	-3
χ VOL. LOST	-2.06	-5	-2.58	-5	-1.03	-5	-5.17	-6
Avg. FLUX	-4.62	-15	-2.41	-16	-1.31	-17	-2.29	-18
INS. FLUX	-4.62	-15	-5.03	-17	2.41	-17	-6.88	-18
					1.37	-17	-2.75	-17

pH = 7.6-7.9 Micro Dis. Si = 105.4 Mol./Area(0-6) = -1.24-11 Mol./Area(2-6) = -4.16-12 Spec. S.A. = 9.00 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	2.00	2.00	4.00	2.00	0.00	0.00	1.00	1.00
LAYERS LOST	5.95	-3	1.19	-2	2.38	-2	2.97	-2
χ VOL. LOST	1.03	-5	4.13	-5	5.17	-5	5.17	-5
Avg. FLUX	2.14	-15	1.78	-16	5.11	-17	2.13	-17
INS. FLUX	2.14	-15	9.33	-17	2.98	-17	0.00	0.00
					1.27	-17	6.39	-18

pH = 7.8-8.1 Micro Dis. Si = 205.0 Mol./Area(0-6) = -1.14-10 Mol./Area(2-6) = 3.55-11 Spec. S.A. = 9.50 -1

	1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS	35 DYS	42 DYS
DELTA CONC.	-5.00	-7.00	-2.60	-1.00	5.00	7.00	-1.00	-3.00
LAYERS LOST	-1.51	-2	-3.64	-2	-1.15	-1	-1.72	-2
χ VOL. LOST	-2.58	-5	-6.21	-5	-1.96	-4	-1.65	-4
Avg. FLUX	-5.48	-15	-5.48	-16	-2.48	-16	-1.20	-16
INS. FLUX	-5.48	-15	-3.33	-16	-1.97	-16	6.52	-16
					3.26	-17	4.56	-17

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TREMOLITE

Den. = 2.98 Form. Wt. = 810 # Si Atoms / Form. = 8 Spec. S. A. = .73 Total S. A. = 1.46 Mol. Vol. = 271.8 L Thickness = 7.68 -8 Vol./L = 1.12 -3 Mol./L = 4.12 -6 Mol. Si/L = 3.30 -5 S.A./cc = 1.94 2 Part. Rad. = 1.37 -4 PN = 8.3-8.5 MicroH Dis. Si = 1.8 Mol./Area(0-6) = 1.14 -9 Mol./Area(2-6) = 9.24-10 Spec. S.A. = 8.40 -1

PH = 7.6-7.9	MICRO N DIS.	S1 = 3.9	MOL./AREA(0-6) = 1.43 - 9	MOL./AREA(2-6) = 6.40-10	Spec. S.A. = 1.10
1 HR*	1 DYS	7 DYS	14 DYS	21 DYS	28 DYS
DELTA CONC.	3.00 1*	4.50 1	1.58 2	7.40 1	4.10 1
LAYERS LOST	4.52 -2	1.13 -1	3.51 -1	4.62 -1	5.24 -1
Z VOL. LOST	1.52 -4	2.84 -4	8.84 -4	1.16 -3	1.22 -3
Avg. FLUX	2.88-14	1.31-15	8.65-16	6.53-16	1.31-16
INS. FLUX	2.88-14	1.03-15	4.17-16	2.31-16	1.63-16

PH = 8.2-8.5	MICRON DIS. SI = 105.4	MOL/AREA(0-6) = 1.36 - 9	MOL/AREA(2-6) = 4.89-10	Spec.	S.A. = 7.50 - 1
DELTA CONC.	1 HR	1 DYS	7 DYS	14 DYS	21 DYS
LAYERS LOST	2.00	7.50	9.80	5.20	1.70
Z VOL. LOST	4.42	-3	1.00	1	1.00
AVG. FLUX	7.59	-6	3.86	-1	5.77
INS. FLUX	2.77	-15	6.66	-4	9.53
	2.77-15	4.45-15	1.44-15	9.38-16	5.18-16
	4.52-15	9.45-16	4.29-16	1.40-16	5.78-17

	PH = 7.8-8.0	MICRO DIS.	S1 = 785.0	MOL./AREA(0-6)	=1.08-10	MOL./AREA(2-6)	=4.50-11	MOL./AREA(2-6)	=4.50-11	Spec. S.A. = 1.25
DELTA CONC.	-6.00	1 HR	-6.00	1 DYS	-9.00	7 DYS	-2.00	14 DYS	-1.20	21 DYS
LAYERS LOST	-7.95	-3	-1.59	-2	-2.78	-5	-3.05	-2	-6.64	-2
Z VOL. LOST	-2.27	-5	-4.57	-5	-7.97	-5	-8.73	-5	-1.51	-2
AVG. FLUX	-5.00	-15	-4.16	-16	-1.04	-16	-5.70	-17	-1.29	-4
INS. FLUX	-5.00	-15	-2.17	-16	-5.20	-17	-9.92	-18	-5.95	-17

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ELEMENTAL ANALYSES

Chemical Composition
(wt. % oxides)

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	TiO ₂	DH&Z*
Albite	73.35	18.64	0.0	0.46	0.11	12.04	0.0	0.22	(324, #1)
Anorthite	43.54	35.66	0.58	0.06	19.53	0.26	tr.	N.D.	(325, #7,8)
Apua Pt. Laua	51.03	13.45	12.92	11.92	10.42	2.95	0.35	2.24	
Bentonite (N.E.W.)	66.33	23.21	4.60	2.69	1.33	3.40	0.24	0.29	
Bentonite (CRC)	66.86	24.16	1.91	4.75	3.17	1.27	0.17	0.79	
Chlorite	30.57	22.83	18.59	29.61	0.33	1.00	0.0	2.24	(234-5, #2,5)
Diopside	51.76	3.11	1.24	14.18	31.53	1.32	P ₂ O ₅ (5.81)	0.20	(105-6, #4,6)
Hornblende	44.62	10.48	17.74	11.66	10.68	4.46	1.39	0.99	(152, #7,10)
Hyaloclastite	51.28	13.44	12.83	12.03	10.53	3.21	0.38	2.23	
Hypersthene	54.83	4.72	16.28	26.03	2.21	1.04	0.0	0.44	(106, #10)
Illite	66.95	20.99	5.60	2.14	0.70	1.53	5.05	1.30	(251, #3)
Kaolinite	51.97	46.41	0.0	0.33	0.0	0.82	0.0	1.80	(251, #1,2)
Kyanite	61.73 (?)	37.03 (?)	0.0	0.43	0.01	0.89	0.0	0.50	
Montmorillonite	68.79	21.37	1.59	6.36	3.63	0.96	0.05	0.48	(252, #5)
Montmorillonite (clean)	66.84	19.74	2.48	6.88	0.10	7.92	0.36	0.56	

Chemical Composition (cont.)
(wt. % oxides)

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	TiO ₂	DH&Z*
Nepheline	43.92.	32.83	0.0	0.49	0.41	18.70	6.20	0.18	(361, #1, 2)
Obsidian	78.27	15.41	1.09	0.56	1.05	4.79	5.22	0.48	
Oligoclase	32.90	52.26	0.0	0.49	0.0	0.82	0.0	0.17	
Olivine	40.12	2.67	16.16	42.74	0.32	0.90	0.0	0.19	(4, #2)
Orthoclase	65.08	23.04	0.0	0.43	3.67	8.77	3.81	0.18	(304, #11)
Quartz	~100	2.86(?)	0.0	0.43	0.0	0.78	0.0	0.18	
Reticulite	51.70	14.27	12.70	10.44	11.04	3.22	0.46	2.37	
Serpentine	43.07	15.07	3.94	5.47	38.41	1.08	0.0	0.93	
Tremolite	62.00	3.80	4.78	20.97	10.85	1.31	0.0	0.22	

*Analyses courtesy of the Soil Science Department, University of Hawaii, using their X-ray Quantometer Analytical Facility. The numbers in the last column give the page and sample number (W. A. Deer, R. A. Howie and J. Zussman, An Introduction to the Rock Forming Minerals, John Wiley & Sons, New York, N. Y., 528 pp., 1971) of elemental analyses of minerals whose composition was most similar to our samples.

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